Learner Profiles
RNZN personnel, their use of technology and the potential for self-directed learning -
a pilot study

James T Kerry

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ABSTRACT

This report describes a pilot study conducted with RNZN uniformed personnel to understand how they access and use technology for training and recreation, at work and at home. The study also assesses the potential of RNZN personnel to undertake self-directed learning. An online survey was devised incorporating the Self-Directed Learning Readiness Survey developed at the University of Sydney. The construction and administration of the survey form is described together with the results. The pilot survey was a success but the process has highlighted some technical issues in the ability of NZDF to deliver surveys digitally. The results indicate: almost universal access to the internet, that the learning management system is being used, but that the majority are not using RNZN simulators. Most RNZN personnel used tools such as Twitter and Facebook regularly. Skype and internet TV were used to a lesser extent but virtual worlds were not popular. Most of those surveyed were suited to self-directed learning but a substantial minority (28%) were not and would require alternative strategies, or additional support and encouragement, to achieve their learning goals.

ACKNOWLEDGEMENTS

EXECUTIVE SUMMARY

BACKGROUND

The New Zealand Defence Force (NZDF) has introduced a number of new learning strategies including simulators, computer based learning, e-learning and distance learning in the last decade but continues, for the most part, to adopt a very traditional pedagogical approach to the delivery of training and learning.   With many publications highlighting the potential differences between the new recruits and those that have preceded them, the terms 'Baby Boomer', 'Generation X' and 'Millennial' have been introduced but it is unclear what the implications are for military training. New technologies are becoming available to individual service personnel at a rapid rate but it is unclear who has access to what, how these technologies are being used and whether or not they can be effective for military training. Finally, a learning management system (LMS) has been introduced into the NZDF along with the concept of training or learning being available 'any place, any time' and the idea that this training or learning should become, at least to some extent, self-directed. However, training managers and instructors have little experience in employing these technologies and no supporting knowledge to help them deploy them effectively.

These knowledge gaps are by no means unique to the NZDF; in fact this research originated from a discussion of these issues at a meeting of The Technical Cooperation Program (TTCP), Human Resources and Performance (HUM) Group, Technical Panel 2 (TP-2) (Training Technology) in Canada in 2008.

The Canadian Defence Academy (CDA) proposed conducting a survey in conjunction with California State University to try to resolve some of these issues and invited the NZDF to participate. Unfortunately California State University (who were devising the survey) and subsequently CDA both withdrew. It was decided that the NZDF still had a knowledge gap and this project was initiated.

An online survey was devised incorporating the Self-Directed Learning Readiness Survey (University of Sydney). This report describes the construction and administration of the survey form and provides the results of a pilot survey conducted with the uniformed personnel of the Royal New Zealand Navy (RNZN).

SPONSOR

COMD NZ DC

AIM

The aim of the pilot survey was to ascertain the feasibility of conducting the survey across the NZDF and the value of the resulting data.

OBJECTIVES

The objectives of the survey were to:

a.　understand access to technology,

b.　quantify use of technology for training / learning,

c.　quantify use of personal technology to supplement RNZN training,

d.　understand how personnel use technology outside work,

e.　identify the benefits (from a student point of view) of using technology and,

f.　provide guidance on the optimum blend between a pedagogical (instructor led) and andragogical (adult learner or self-directed learning) approach to content delivery for a course, given certain parameters (e.g. service, length of service, trade).

RESULTS

The results of the survey provided some useful insights but these should be treated with caution until a full survey, with a larger survey size, is conducted. Observations of note are:

a.　All personnel surveyed had access to broadband internet either at home, or via the 3G telephone network, although a small minority (3%) choose not to use it. A number of people (4%) were frustrated that the internet was not available at sea.

b.　The LMS was being used; 40% of people had conducted some form of professional training using it. However, its potential in the RNZN is constrained because it is not available to personnel at sea or at home.

c.　Given the level of investment in simulators, it is of note that 72% of personnel had not experienced simulator time in the previous 12 months.

d.　Tools such as Twitter and Facebook and, to a lesser extent, Skype and internet TV were widely used. Consequently, it is worthwhile investigating their utility for the delivery of training. On the other hand virtual worlds are little used (<10%) and therefore not a suitable medium for training.

e.　Most people surveyed were suited to self-directed learning but a substantial minority (28%) were not. This minority are typically male ratings with NCEA level 0-3 education. This group would require alternative strategies, or additional support and encouragement, to achieve their learning goals.

CONCLUSIONS

Pilot

The pilot survey was conducted successfully and is suitable, with a few amendments and corrections, for wider NZDF implementation. In particular some examples given in Part 1 will have to be modified if the questions are to be understood by Army and Air Force uniformed personnel. Part 1 of the survey form will need to be reviewed in full to ensure that it is appropriate for the civilian workforce.

Large scale NZDF wide surveys could be more efficiently conducted if the NZDF Survey Tool was in service.

This pilot was significantly delayed by the NZDF approval process. Defence Force Order 21/2002 (Authority to Conduct Personnel Research) needs to be re-written to reflect the changed NZDF organisation and responsibilities, and the approval process optimised to avoid unnecessary delays to future personnel research.

Survey

Although all those surveyed had access to the internet (and associated tools such as Facebook, Twitter, Internet TV and Skype), it is not utilised by the RNZN for the delivery of training or learning. This would seem to be a missed opportunity.

The LMS is only available in shore based units via DIXS. It is not available to NZDF personnel in deployed units (such as ships) or, via the internet, to personnel who wish to study at home. This is contrary to the LMS investment case.

Self-directed learning is suitable for use in many situations but alternative strategies or additional support must be available for those who need it.

RECOMMENDATIONS

It is recommended that the:

a. The use of self-directed learning is encouraged where appropriate, but that alternative strategies, support and encouragement are provided for the minority who are not suited this form of training.

b. The utility of tools such as Twitter and Facebook and, to a lesser extent, Skype and internet TV for the delivery of training is investigated.

c. The LMS should be provided to those at sea, in other deployed units and via the internet if it is to achieve its potential.

d. This survey be conducted on the entire NZDF including the civilian workforce in 2013 and repeated annually until 2017 in order that changing trends in the use of technology can be identified.

e.   Defence Force Order 21/2002 (Authority to Conduct Personnel Research) is re-written to reflect the changed NZDF organisation and responsibilities, and the approval process optimised to avoid unnecessary delays to future personnel research.

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1.   **Introduction**

The New Zealand Defence Force (NZDF) has introduced a number of new learning strategies including simulators, computer based learning, e-learning and distance learning in the last decade but continues, for the most part, to adopt a very traditional pedagogical approach to the delivery of training and learning.   With many publications highlighting the potential differences between the new recruits and those that have preceded them, the terms 'Baby Boomer', 'Generation X' and 'Millennial' have been introduced but it is unclear what the implications are for military training. New technologies are becoming available to individual service personnel at a rapid rate but it is unclear who has access to what, how these technologies are being used and whether or not they can be effective for military training. Finally, a learning management system (LMS) has been introduced into the NZDF along with the concept of training or learning being available 'any place, any time' and the idea that this training or learning should become, at least to some extent, self-directed. However, training managers and instructors have little experience in employing these technologies and no supporting knowledge to help them deploy them effectively.

These knowledge gaps are by no means unique to the NZDF; in fact this research originated from a discussion of these issues at a meeting of The Technical Cooperation Program (TTCP)[1], Human Resources and Performance (HUM) Group, Technical Panel 2 (TP-2) (Training Technology) in Canada in 2008.

The Canadian Defence Academy (CDA) proposed conducting a survey in conjunction with California State University to try to resolve some of these issues and invited the NZDF to participate. A project charter was instigated (1) but unfortunately California State University (who were devising the survey) and subsequently CDA both withdrew. It was decided that the NZDF still had a knowledge gap and this project was initiated.

2.   **Aim**

The aim of the pilot survey was to ascertain the feasibility of conducting the survey across the NZDF and the value of the resulting data.

3.   **Objectives**

The objectives of the survey were to:

a.   understand access to technology,

b.   quantify use of technology for training / learning,

c.   quantify use of personal technology to supplement RNZN training,

d.   understand how personnel use technology outside work,

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[1]   The Technical Cooperation Program (TTCP) is an international organisation that collaborates in defence scientific and technical information exchange; program harmonisation and alignment; and shared research activities for the five nations (Australia, Canada, New Zealand, UK, USA).

e.   identify the benefits (from a student point of view) of using technology and,

f.   provide guidance on the optimum blend between a pedagogical (instructor led) and andragogical (adult learner or self-directed learning) approach to content delivery for a course, given certain parameters (e.g. service, length of service, trade).

4.   Background

In 1991, Carolyn Saunders published an article 'Pedagogy v Andragogy: Are We Treating Our Students Like Children? ' (2) and said; *"Perhaps we need to ask ourselves if our students act like children because we are treating them as children, rather than adults, in the classroom. Or to take this analysis one step further, perhaps we are using principles of learning more suitable to children than to adults."* More than twenty years later her question is just as relevant.

Andragogy is *"the art and science of helping adults learn" .* Pedagogy is derived from the Greek *paid*, meaning 'child' and *agogus* meaning 'leader of'. It is derived from a European philosophy of religious teaching (3).

When recruits join the NZDF they are dependent on their instructors and the military system to deliver the right training at the right time but gradually, as they gain knowledge, experience and motivation, the hypothesis is that they have the potential to become self-directed (Ibid p187-196). Yet the military often continue to adopt a predominately directed or 'spoon fed' approach to most training. However, there may be more efficient ways of preparing military people for their roles. One way is to motivate people to take some responsibility for their own learning and start to seek it out for themselves. This has been termed self-directed learning (Ibid p 65).

To discover if individuals are suited to self-directed learning, Guglielmino developed the 'Self-Directed Learning Readiness Scale' (4). This original scale has been much examined and its validity questioned over the years. In 2001 the University of Sydney (5) developed an updated version that has been fully validated and, although this version was developed for nurses, it has since been revised to be profession neutral. The University of Sydney has given approval for the use of their self-directed learning scale for this project (6).

Much has been written about the difference technology is making to people's approaches to life. The terms 'Baby Boomer, 'Generation X' and 'Millennial' have come into common parlance and it is speculated that these generations have different learning approaches and needs. There are currently three very different generations working side by side in the NZDF (7):

a.   Baby Boomers (born between 1946 and 1964) and approaching retirement. Baby Boomers saw cultural change while raised in "traditional" homes where the number of mothers entering the workforce was starting to increase. The Vietnam War was ongoing, and electronics and technology were beginning to grow (8). The single most important technological development during the Boomer's adolescence was the

television, which permitted them to experience real time world events. Television was also used to broadcast educational and training material that could be used to support instruction in the classroom and at a distance (e.g., home or a remote site) (9).

b.   Generation X (1965-1980) are climbing up the chain of command. Generation X were the "latchkey kids" at the end of a school day, with more working mothers, the explosion of technology, higher divorce rates, drug abuse, political scandals and the Cold War. They saw a negative society and had to rely on themselves more often. Their cultural experiences are credited for giving them their greater sense of independence, questioning of authority and wanting to find a balance between family and work (8).

c.   Millennial Generation (1981-2000) now being recruited. Millennials parents gave greater focus on family. They have seen an explosion of technology from the time they could use a keyboard. Computer technology has been all around them ranging from electronic games, internet access and emails, to instant messaging and cell phones (8). Millennials learning preferences tend toward teamwork, experiential activities, structure, and the use of technology (10).

With the move to a 'Total Defence Workforce' and the need to 'streamline costs and increase learning opportunities' (11), the NZDF is introducing new forms of training but has little idea of how its personnel use technology or what technology they have access to. As the NZDF strives to provide the most effective and efficient training possible, it should understand the style of learning and / or training that will best suit the learning profile of service personnel as they progress through their careers.

5.   Methodology

It was decided to gather the information for this project by way of a survey and, given that the survey was ultimately to cover the entire NZDF and with limited resources, that it should be conducted electronically. This would enable results to be gathered and analysed as quickly and reliably as possible. Conveniently, by late 2009, a survey tool software package had been approved for use on the Defence Information Exchange System (DIXS) Intranet. Regrettably that software package was never implemented and so the survey form was revised as an Adobe Acrobat Form that could either be sent by email or completed via master copies located on deployed servers.

5.1   Survey Form Design

5.1.1   Part 1 – Use of Technology

The purpose of Part 1 of the survey was to gather data about how NZDF personnel access technology and how they use it for training / learning. What technology is available to NZDF personnel and do they use it to supplement NZDF training? What do they use it for? What benefits do they perceive that technology brings to learning?

Starting with a similar survey investigating the use of digital technologies in two British universities (12), a questionnaire was formulated and then submitted to scrutiny by two expert panels. The first panel of occupational psychologists provided professional advice on survey form construction and wording. The second panel, consisting of nine members of the NZDF education branch (three from each service), examined the relevance of the questions using the Delphi method; *'a method for structuring a group communication process so that the process is effective in allowing a group of individuals, as a whole, to deal with a complex problem'* (13)

The basic method, as described by Delbecq, Ven and Gustafson (14), is:

a.   Develop the initial questionnaire and distribute it to the panel.

b.   Panellists independently vote on the relevance of questions, generate their ideas for improvements and return it.

c.   A moderator summarises the responses to the first questionnaire distribution and develops a feedback report along with the second set of questionnaires for the panellists.

d.   Having received the feedback report, panellists independently evaluate earlier responses and independently vote on the second questionnaire.

e.   The moderator develops a final summary and feedback report to the panellists and decision makers.

The process is repeated until sufficient consensus is achieved. In this case, after two rounds of the Delphi process, there was 80% or greater agreement that all the questions were relevant.

5.1.2   Part 2 - Self-directed Learning Readiness Survey (SDLR)

The purpose of Part 2 of the survey is to identify personnel who are ready to undertake self-directed learning. This part of the survey was developed at the University of Sydney and has been rigorously validated (5). DTA was granted approval to use the survey for NZDF research (6).

5.2   Variables

Using the service number of respondents a set of data was obtained from ATLAS (the NZDF personnel database). This removed the need for additional demographic questions to be asked. For this survey the data required is in Table 1.

Age	Service
Branch	Rank
Gender	Marital Status
Length Of Service	Educational achievement

Table 1: ATLAS data required

Educational achievement was not available from ATLAS and so a question based on the NZ census form (15) was included in the survey.

Consideration was also given to including ATLAS derived ethnicity data but this was dismissed due to the ambiguity of the classification scheme. For example, when a classification such as MEI (Māori / Euro / Irish) was available it was not clear which culture dominated, the respondent may identify with Māori ethnically but have been raised and educated in a predominately Pakeha[2] social context.

Every effort was made to make the questions in the survey generic with regard to service and nationality, in order that it may be shared with TTCP colleagues. A breakdown of survey questions is at Appendix 1.

6. Administration

6.1 Approval to Conduct Research

An application was made on 2 Dec 2010 (16) using the procedure outlined in Defence Force Order 21/2002 (17). Approval was received on 27 Oct 2011 (18), some 10 months later, which considerably delayed the conduct of the survey. The approval response requested that a copy of the pilot report be forwarded to the Defence Personnel Executive and that "*NZDF Civilian personnel be included along with NZ Army and RNZAF in the proposed follow-on surveys in order to better understand learner profiles within that group of the Total Defence Workforce*".

6.2 Project Timeline

This project has been broken down into six separate phases (each with its own deliverable) as shown in Table 2.

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[2] The precise meaning of the word "Pakeha" is open to debate but in this context applies to New Zealanders of European (primarily British and Irish) descent. This is the interpretation used in official New Zealand documents and forms.

Phase	Proposed		Revised	
	Start	**Finish**	**Start**	**Finish**
Create survey, conduct pilot, produce initial report	Jun 10	Jun 11	Jun 10	Dec 12
Gain approval for continuing annual surveys	Nov 11	Dec 11	Nov 11	Jan 13
Conduct first full survey	Jun 11	Aug 11	Jun 13	Aug 13
Analyse data, produce draft annual report	Aug 11	Nov 11	Aug 13	Nov 13
Conduct peer review	Nov 11	Dec 11	Nov 13	Dec 13
Issue report		Dec 11		Dec 13

Table 2: Project phasing

The pilot survey was conducted with RNZN personnel, primarily because of ease of access from DTA. Personnel surveyed during the pilot will not be asked to repeat the survey if a subsequent full survey is conducted.

6.3   Sample Required

Given the anticipated response rate of about 30%[3]; the desire from Headquarters to minimise the impact of the survey on Service personnel and, the length of service profile of the regular force (19), it was decided that the survey sample should be 'salami sliced' based on length of service as follows:

Length of Service
Not less than 1 year, no more than 2 years
Not less than 4 years, no more than 5 years
Not less than 7 years, no more than 8 years
Not less than 10 years, no more than 11 years
Totals

Table 3: Proposed pilot survey

In this way, if or when the survey is repeated, personnel will not have to complete the survey again until the third year. This will mitigate against survey fatigue.

6.4   Conduct of the Survey

Conducting the survey proved to be more difficult than anticipated. A communications plan was put in place, including a letter to all Commanding Officers and announcements on the Navyweb pages, and executed. The NZDF was going through a period of civilianisation and reorganisation and suspicions of the motivations of the research and privacy of the individual had to be overcome. To encourage participation $500 dollars was set aside to enable those who successfully completed the survey to go into a draw to win a smart-phone or tablet.

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[3]   This information based on the practical experience of Ms Nikki Rasmussen (Senior Organisational Research Analyst)

Thirty percent[4] of naval personnel are posted to ships and, although the ships are well connected by satellite, bandwidth to the ships is limited and required primarily for operations. In order to make most efficient use of this bandwidth Naval Information Systems assisted the project by placing the survey on separate servers in the 12 ships and ashore. In this way the survey could be initiated by sending an email containing links to the form on the servers. This technique involves minimal bandwidth and replies can be consolidated using Adobe Acrobat before being exported as a comma separated value (csv) file. The first attempt at the survey was made on 1 Mar 12. Most of the links did not work, but despite this 35 people found workarounds and responded. A second attempt was made on 30 May 12 sending the form as an email attachment. The email was sent on a Sunday afternoon to minimise network disruption but a large number were returned as 'undeliverable' because they exceeded the 2Mb limit. The blank Adobe Acrobat form is 1.6Mb in size and around 2Mb when completed but, according to the Defence Service Desk, "*as the message is routed from exchange server to exchange server, additional (header) info is attached to the original message, increasing the message size. The result of this is self evident, thus preventing the message reaching the intended recipients on ship. In addition to header packing, there are also other factors such as MIME conversion that can alter a message size whilst being transported.*" (20)*.* Finally, it was decided to revert to the original concept of sending links to the survey form placed on ship servers and, after extensive testing, the survey was successfully re-issued on 13 June 12 to all those who had not already responded.

7.   **Analysis**

The responses to each question were analysed first in total and then on the basis of:

    a.   rank grouping,

    b.   branch grouping,

    c.   gender,

    d.   educational achievement grouping,

    e.   relationship status,

    f.   length of service grouping, and

    g.   generational grouping.

The purpose of these groupings (full details are at Appendix 2) was to enable consistent comparisons to be made if the survey is extended across the individual Services. For each question an initial chart provides a summary of the responses to the question from the entire sample and a second chart gives a breakdown by grouping and sub-group that enables a simple visual comparison across the results.

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[4]   The exact percentage of RNZN personnel posted to seagoing billets varies between 29% and 35%. As of December 2012, there were 614 seagoing billets for an average population of 1900 (32%) but the number of personnel at sea is regularly in excess of this to accommodate the need for task book training. Source Mr John Barrett (Workforce Planner – Maritime).

8.   Results

The following paragraphs provide a broad summary of the results together with a high level graphical summary for each group of questions. Detailed results may be obtained by request from the author and are available on both the DTA Intranet site and DTA Website. With the exception of the one responder with a doctorate, groups had sufficient numbers to be representative.

8.1   Responses

During the period March to June 2013 RNZN attrition rose in excess of 23% (21) and morale was deteriorating rapidly (22), so it is not surprising that the survey responses were limited (29%). 388 people were sent the survey (or links to it); of those 42 had left the Service before they received it, 11 were 'out of office' long term and 15 were 'undeliverable' (Figure 1). 93 responses were received from the 320 individuals who were able to respond. This was slightly disappointing but not a surprise given the background to the survey.
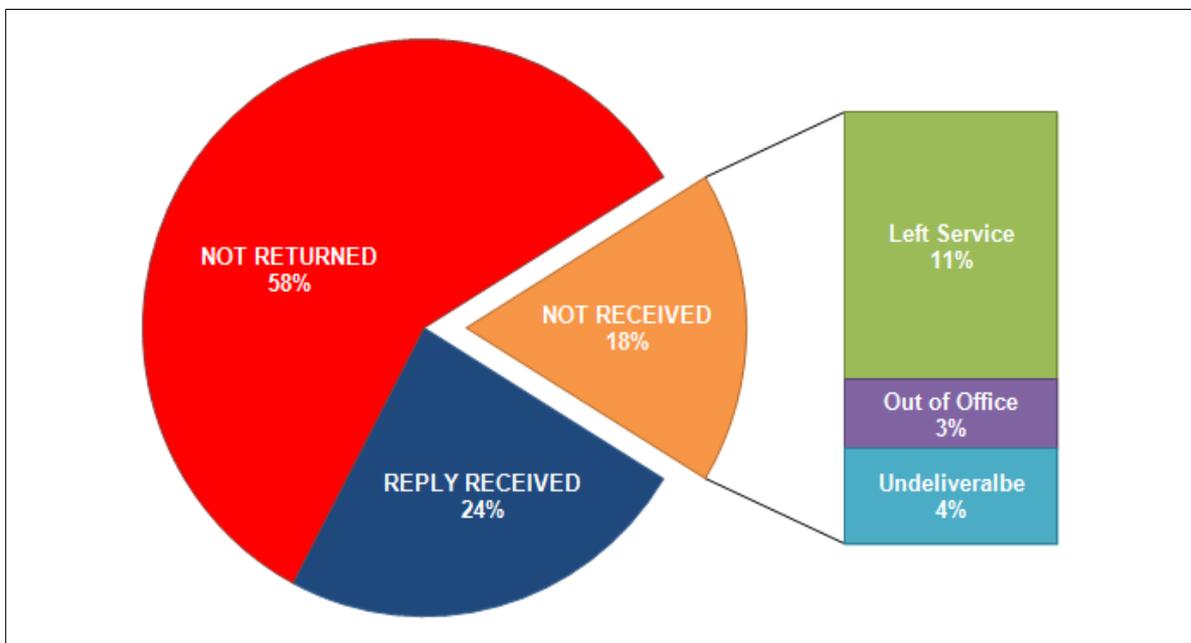
Figure 1: Survey Responses

8.2   Part 1 – Use of Technology (Q4-28)

8.2.1   Section A - Personnel access to technology (Q4-5)

Access to the Defence Intranet (DIXS)(Figure 2):

The majority of responders accessed DIXS at their place of work. There were only minor variations between the various groups although it is of note that no one with less than two years service had accessed DIXS in a classroom. This is the very group who spend most of their time under training.
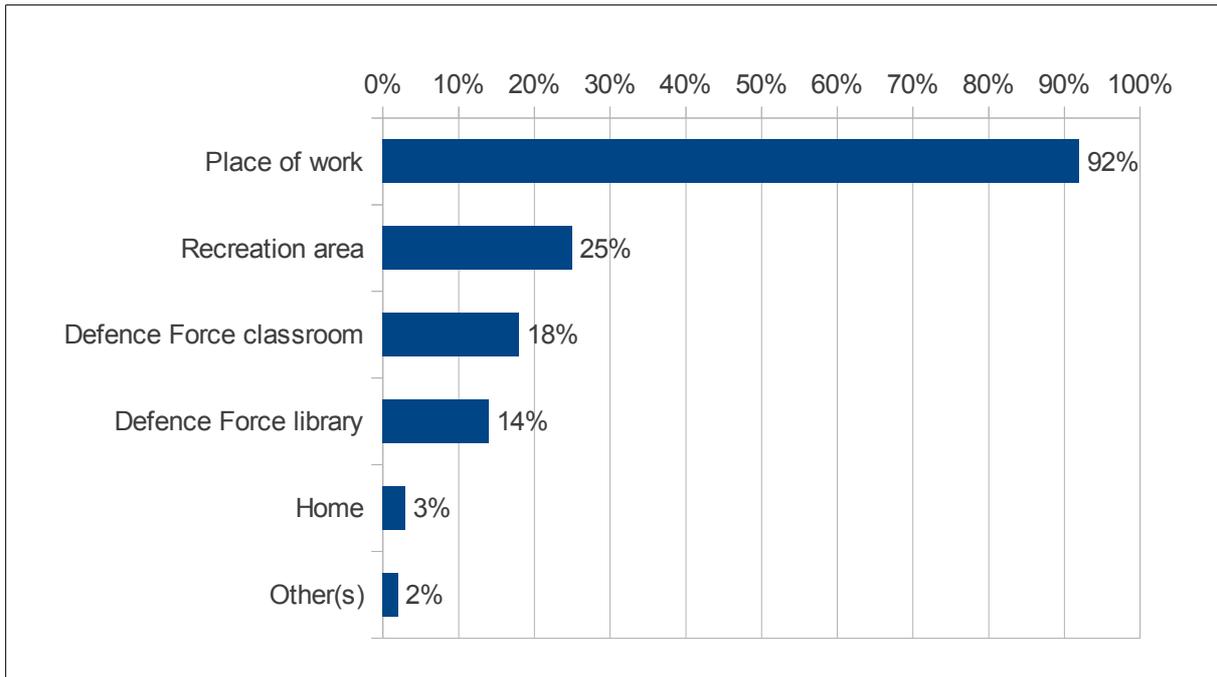
Figure 2: Access to the defence Intranet (DIXS)

Access to the internet (World Wide Web)(Figure 3):

Everyone had broadband access to the internet (many by more than one method e.g. home and mobile broadband) but 3% said that they had access to the web and chose not to use it. This group was made up exclusively of millennial ratings who had been in the Navy for less than 2 years. It will be interesting to see how this trends in the wider survey. A number of people (4%) highlighted the frustrations of not being able to access the internet from seagoing units.
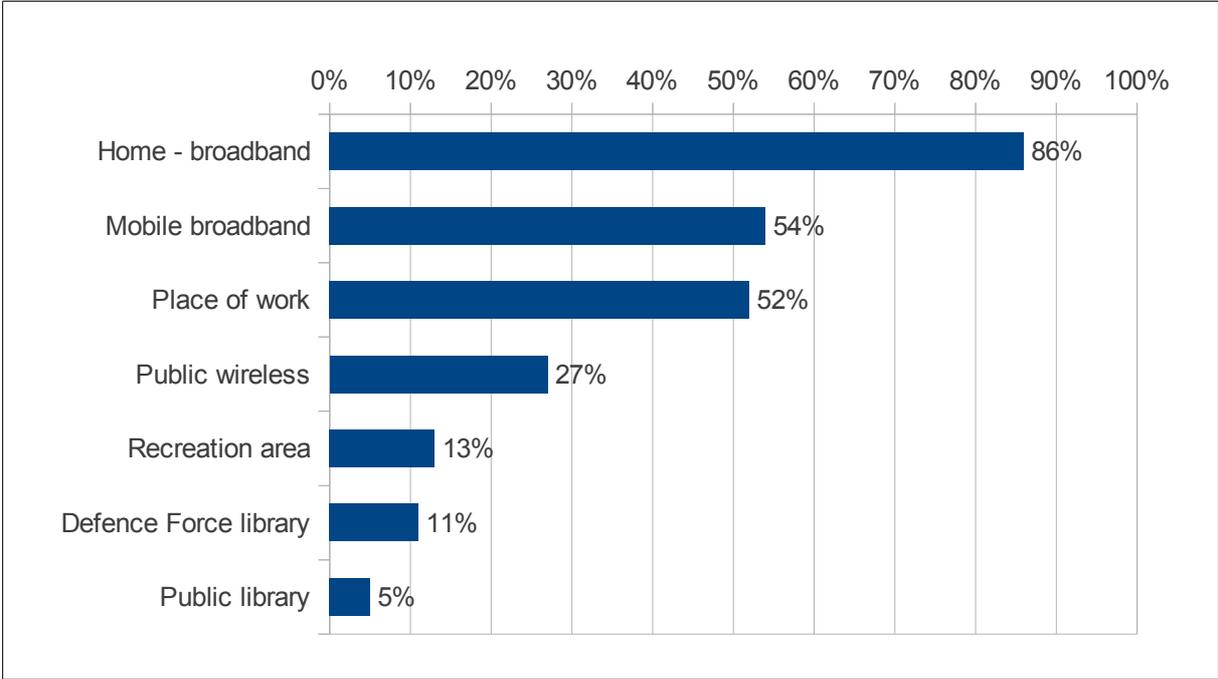
Figure 3: Access to the internet (World Wide Web)

8.2.2   Section B - The use of technology for training / learning(Q6-12)

During the last 12 months, when receiving Defence Force training, what technology have you used? (Figure 4)

80% of personnel had undertaken a course (professional or miscellaneous[5]) in the last 12 months. A higher proportion of females (33%) had undertaken no courses compared to 16% for males.

More than 40% of people had conducted some professional training using DIXS in the last 12 months. This was probably due to the introduction of compulsory military justice training and pre-requisite training for promotion courses. It is anticipated that this figure will increase gradually as more material becomes available on the LMS. The biggest users of the DIXS for training were those with a length of service less than two years and Baby Boomers. This would appear contradictory but there are a number of experienced lateral recruits who have been in the RNZN for only a short time.

37% of personnel have conducted miscellaneous training on DIXS. This includes such things as SAP training and software training that are not included in formal courses or necessarily delivered through the LMS. Officers, those with degrees and Baby Boomers are the biggest customers for this training.

Given the investment by the RNZN in simulators, it is surprising that 72% of personnel had experienced no simulator time in the previous 12 months. This rises to 82% for NCOs, 93% for Generation X and 100% for Support Branch. It may be that these figures would change if the damage control simulator, and the 'training wardroom' were given as examples, as these may not necessarily be considered by students as 'simulators' in the context of this survey. Consideration will be given to amending the survey to reflect this.

Less than 20% of those surveyed had used the internet for training. This is not a surprise given that the LMS has not been implemented on the internet. However, in view of the pervasiveness of access to the web (paragraph 9.1.1), it is a missed opportunity.

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[5]   For the purposes of this section training was considered in two parts: Formal professional career courses (related directly to a trade or advancement) and, miscellaneous training (e.g. HR Systems Training, Military Justice Training, SAP Intranet Training Site, Microsoft elearning Library).
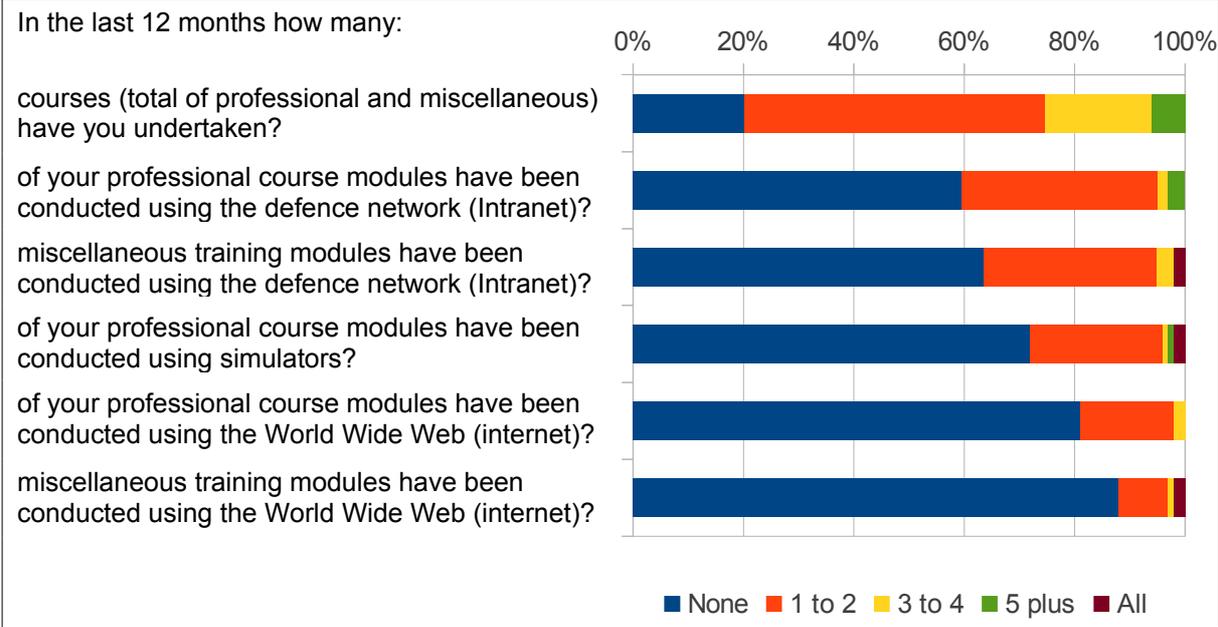
Figure 4: Courses taken on DIXS or the internet

Please indicate how often in the last 12 months you used each of the following tools provided by the Defence Force in relation to your training. (Figure 5).

A resounding 89% of personnel claimed to have used the LMS online discussion groups. This result was a surprise. The LMS is relatively new but according to Mrs Loren Stagg (LMS Specialist) there were, on 28 Nov 12, 90 active forums in the system[6]. However, of these only two showed significant activity:

     a.   Foundation Instructor Pre-requisite Course, 82 active participants.

     b.   NZDF College Community of Best Practice, 32 active participants.

During the period of manpower reorganisation in 2012, a number of RNZN forums were set up outside the LMS for the benefit of those affected and it may be that these are the 'online discussion groups' that respondents are referring to. Alternatively it may be that the question was misunderstood in which case it may need to be reworded. Future responses to this question will need to be carefully monitored to reveal whether this is a true reflection or an aberration.

The MS Office Tools suite was used extensively to support training. The most popular tools were Outlook and Word closely followed by Excel and PowerPoint.

The majority of personnel had used a DIXS course website, share-point or the LMS for training. 65% used these facilities at least occasionally and 24% monthly or more. Females made least use of DIXS (more than half had not used its facilities for training); while the better educated and Baby Boomers made the most use of DIXS websites and the LMS for training.

38% of people surveyed had not used the telephone in relation to training in the last 12 months. There was little significant difference between the categories with the exception of Generation X, 93% of whom used the telephone at least occasionally.

42% of personnel used simulators or games provided by Defence which is encouraging. The vast majority of these were Operations (60%) and Technical Branch (57%); Support Branch made little or no use of gaming and simulation. Generation X made very little use of this technology compared to Baby Boomers and Millennials.

Text messaging was used sparingly in this context, 70% never used it during the period. Females were the least likely to use it only 16% had used it at all compared with 35% for males. This is probably because few personnel have Defence supplied mobile phones.

Video Conferencing was hardly used for training, 84% had never used it while 10% had used video conferencing only occasionally.

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[6]   Forums are automatically created when a course framework is set up but, even though they exist in the LMS, the majority of them will not be linked to a course for students to participate in.
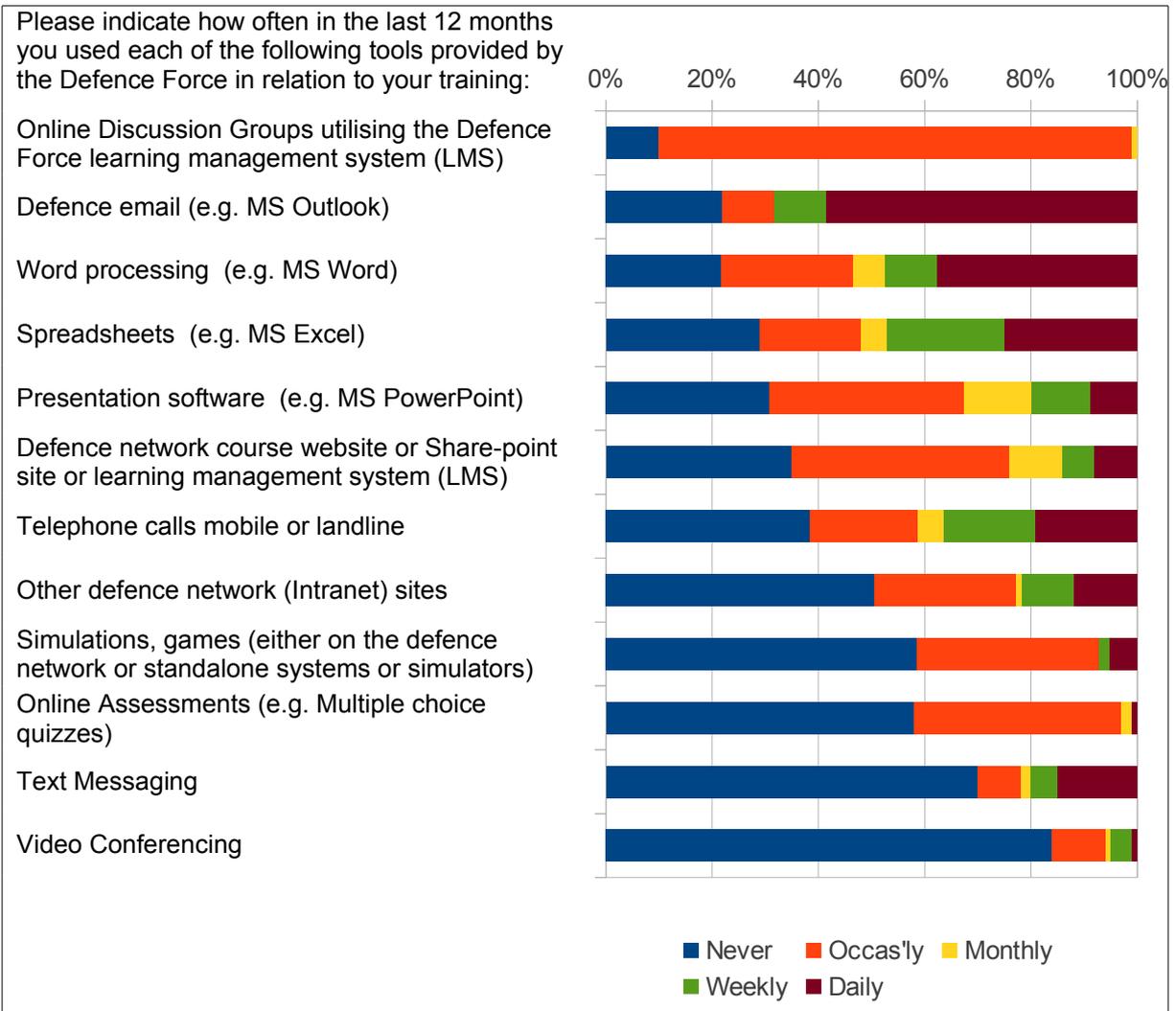
Figure 5: Use of tools provided by the Defence Force in relation to training

8.2.3 Section C - The use of personal technology to supplement NZDF training (Q13-15)

Please indicate those soft tools, NOT provided by the Defence Force, you use to help you with your Defence Force training / study. (Figure 6)

Weblogs, blogs or microblogs were used by the great majority on an occasional basis (89%). There was little difference in use between the categories although Baby Boomers use them least (17% never).

A high number of people (78%) occasionally used private games or simulations in support of their training . Females (92%) were more likely to have used this media than males (84%) although there were more regular male users (7% daily / weekly) than females (0% daily / weekly).

Personal email, telephone calls and the internet were most frequently used to support NZDF training. There was frustration expressed at the lack of internet accessibility at sea. Websites most frequently mentioned were:

    a.   Google   15

    b.   Wikipedia   15

    c.   YouTube   9

Nearly half of those surveyed use video clips in support of their training from time to time;14% used them weekly. Generation X, those with degree level education and NCOs were the heaviest users of this media.

Social media was utilised for training only a little, around 70% never used it and 16% just occasionally.

Internet forums (also known as message boards or discussion boards) were used sparingly, 16% used them occasionally but only 8% on a more regular basis. Generation X and the technical branches were the most likely to use them.

Skype type facilities were not used much for training but it is anticipated that this is an area that could expand and the trend will be interesting to monitor.
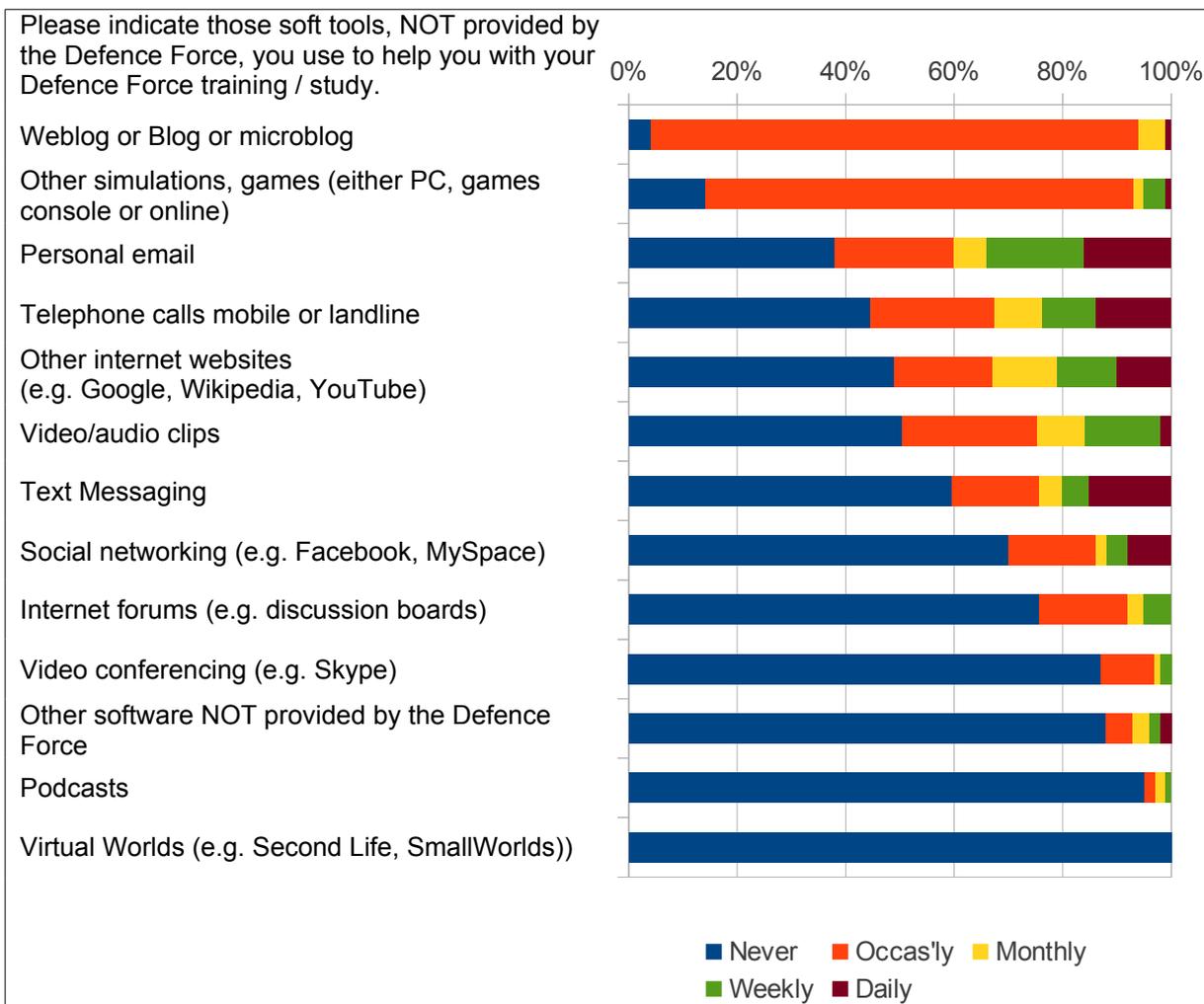
Figure 6: Soft tools, NOT provided by the Defence Force, used to help with Defence Force training / study

Please indicate equipment, NOT provided by the Defence Force, which you use to help with your Defence Force training / study. (Figure 7)

Those surveyed made modest use of their own equipment such as a PC. Although 20% used one daily, 34% never used one at all. Again Generation X and the Technical Branches were the biggest users.

Mobile phone use in this context is modest but up to 56% used their personal mobile phones occasionally. Generation X and the Technical Branches made most use, Baby Boomers and Support Branches the least.

RNZN personnel use their own telephones for text messaging more than service phones (presumably because most do not possess a service mobile phone), about 15% use it daily.

62% never used a camera but a notable exception was the Technical Branches, 53% of whom used a camera at least monthly or occasionally.

Little use was made of standalone portable media players (e.g. iPod, mp3 / mp4 player) to support training, 70% never used it at all.

Hardly any use was made of e-readers or podcasts, only 5% utilised this source of information.

Virtual worlds (e.g. Second Life, SmallWorlds) had not been used by anyone for training is the last 12 months.

44% thought it would be beneficial to use some of these tools/software in their training, 36% didn't know. Suggestions included:

– Providing technical manuals and workbooks in electronic format on Ipad / tablet.

– The provision of devices to aid note taking during courses *"camera on smartphone devices captures images for wiring and dismantling references and can also photograph whiteboard notes written by the teacher"* and provide wireless access to training material.

– *"wikipedia would benifit in the LMT (L) course , very help full"*

– *"Applications on mobiles and personal laptops prove useful for future advancements in training in information technology"*

– *"When out in the field, it would prove very useful to take notes and fill in forms on a tablet or similar device, so paperwork doesn't get lost or illegible due to moisture or smudging, as well as being able to download photos for inserting into reports."*
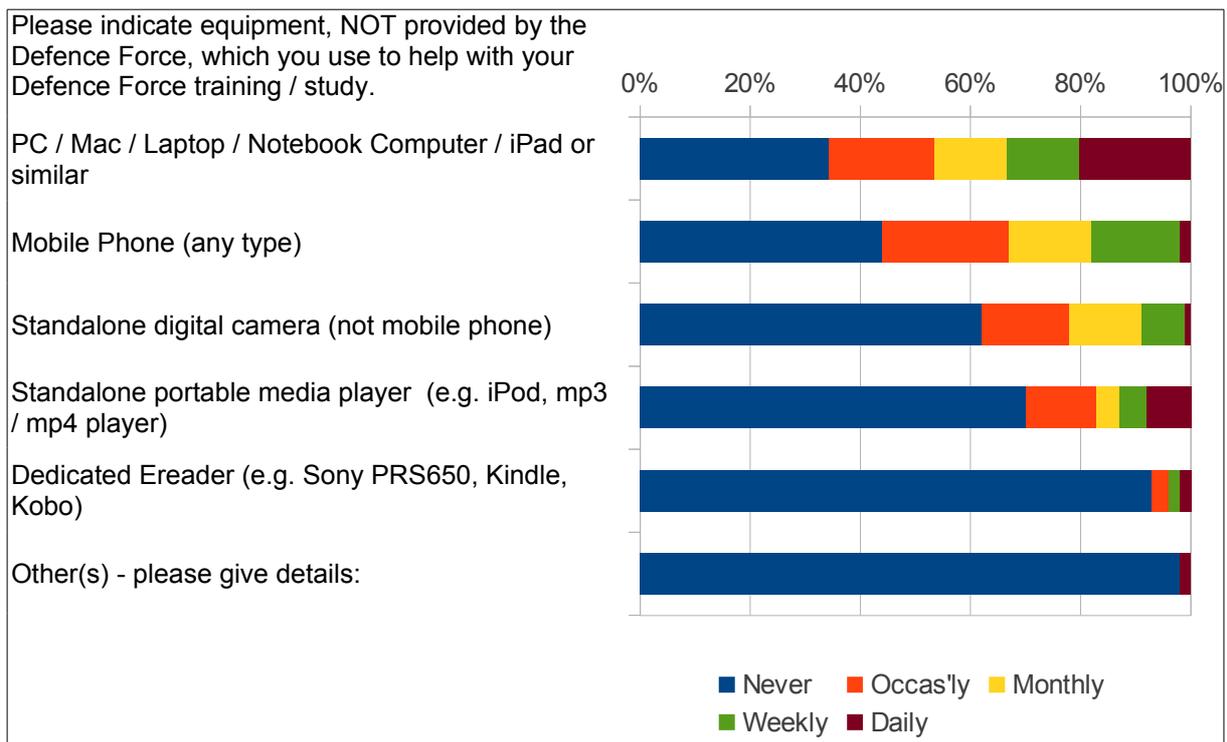
Figure 7: Equipment, NOT provided by the Defence Force, used for Defence Force training / study

8.2.4 Section D - How personnel use technology outside work, (Q16-17)

Outside work, which of the following do you use regularly? (Figure 8)

Everybody had access to broadband internet and most people had used a PC regularly but use of iPad's and Ereaders was relatively rare. Most people (60%) did not use a games console and only 7% of those with a degree or higher education used one regularly.

Overall 54% of people were using a smartphone but 83% of Baby Boomers still had a 'text and talk' mobile phone.
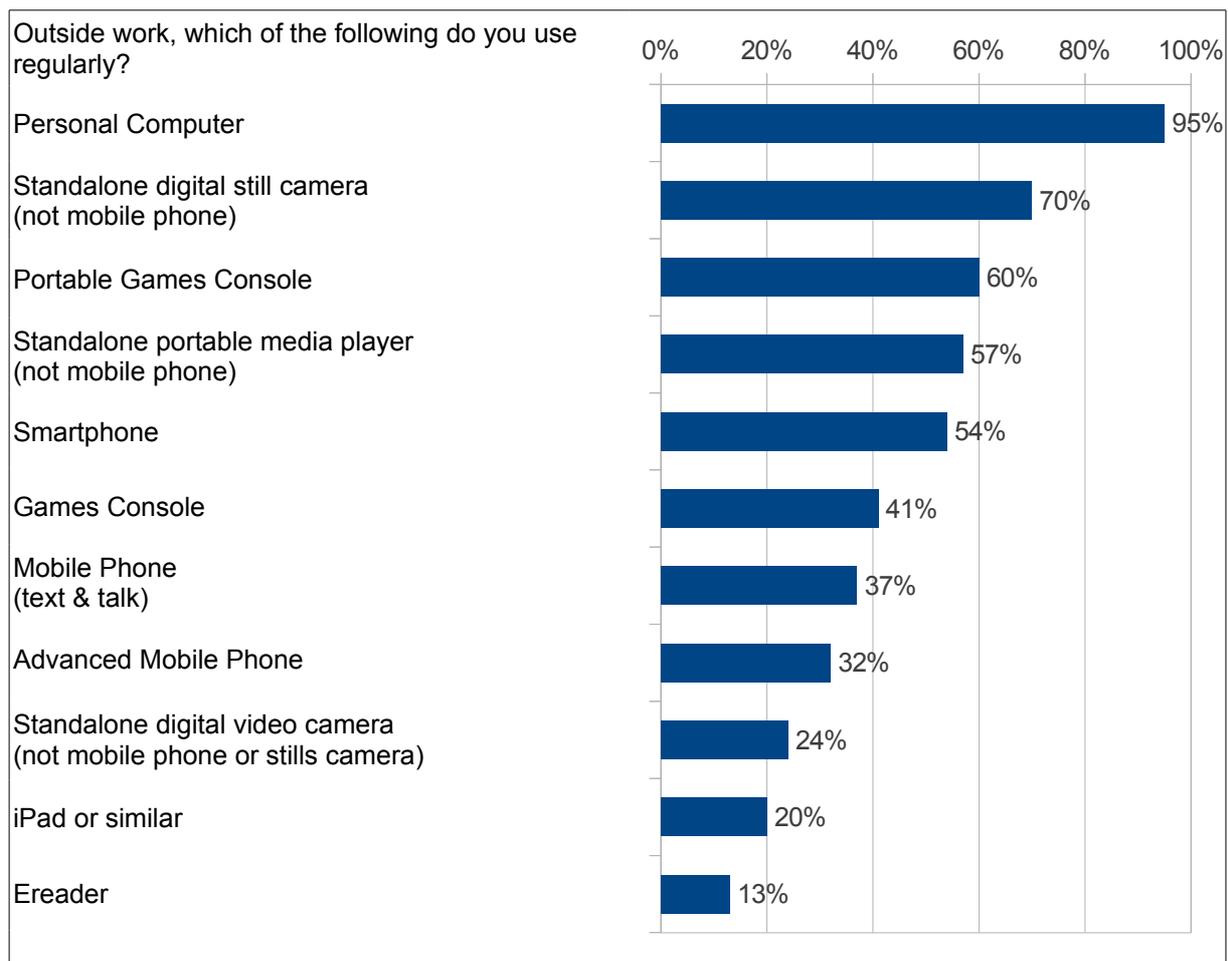
Figure 8: Technology use outside work

How often do you use World Wide Web (internet) services outside work? (Figure 9)

Virtual worlds were of little interest to RNZN personnel but blogs (such as Twitter), photograph uploading, online music services and social networking were very popular.

How often do you use World Wide Web (internet) services outside work?	
Blogging (e.g. Blogger, Twitter, Tumblr.)	99%
Photo upload and sharing (e.g. Flickr)	96%
Music (e.g. iTunes, LastFM, digiRAMA, radio, etc.)	90%
Social networking (e.g. Facebook, MySpace)	87%
Wikis (e.g. Wikipedia)	83%
Web Calling, Voice and Video Instant Messaging and / or Web Conferencing (e.g. Skype)	74%
Internet TV or IPTV (e.g. TVNZ OnDemand, TV3 On Demand, Ecast)	73%
Video upload and sharing (e.g. YouTube)	70%
File sharing (e.g. BitTorrent, LimeWire, eMule)	41%
Internet forums (also known as message or discussion boards)	30%
Virtual Worlds for social activities and learning (e.g. Second Life, SmallWorlds)	9%
Virtual worlds for gaming (e.g. World of Warcraft, Free Realms)	6%

Figure 9: Use of World Wide Web (internet) services outside work

8.3 Part 2 - Self-Directed Learning Readiness Survey (Q29-68)

This section was aimed at providing some guidance on the optimum blend between a pedagogical (instructor led) and andragogical (adult learner or self-directed learning) approach to content delivery for a course, given certain parameters (e.g. service, length of service, trade). It is considered that a total score greater than 150 indicates readiness for self-directed learning (5). In this case the average score was 157.3. with 72% passing (a score greater than 150).

There were some potentially significant points from the analysis of results by grouping, in particular:

a. Educational achievement appeared to be a reliable indicator of readiness for self-directed learning (Figure 10).
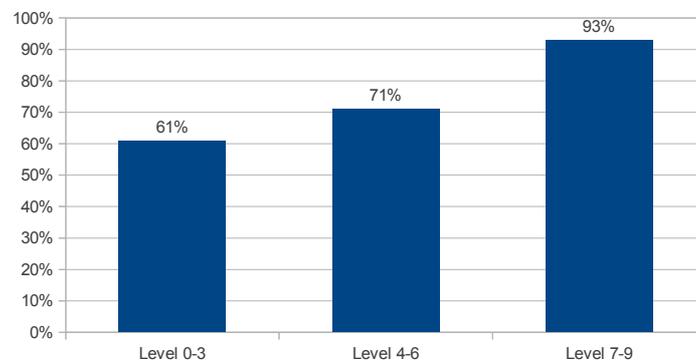
Figure 10: SDLR Survey Result: Education Grouping

b. Generation X (86%), achieved better pass rate than Millenials (70%) who performed slightly better than Baby Boomers (67%)(Figure 11).
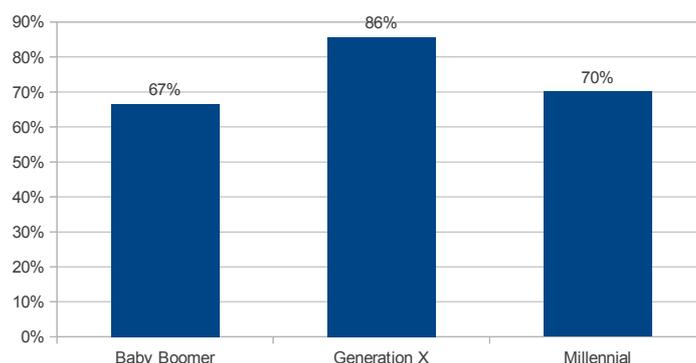
Figure 11: SDLR Survey Result: Generation Grouping

c. Significantly more females (83%) than males (68%) achieved the pass mark (Figure 12).
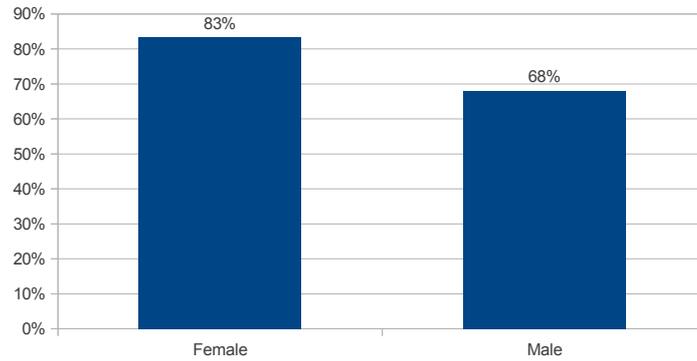
Figure 12: SDLR Survey Result: Gender Grouping

d. Although age seemed to have no bearing on the results (Figure 13),
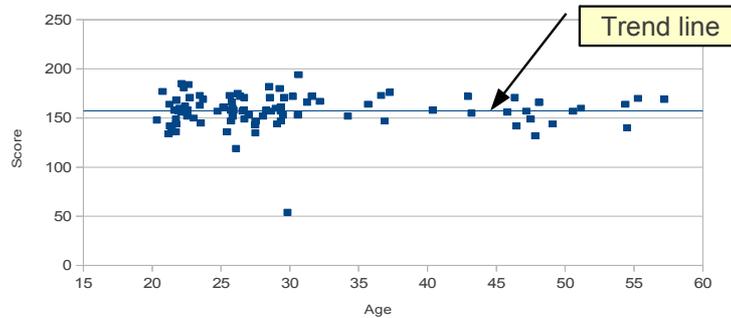
Figure 13: SDLR Survey Result: Age v Score

group results indicated that those who had served longest were more likely to achieve the pass mark (Figure 14):
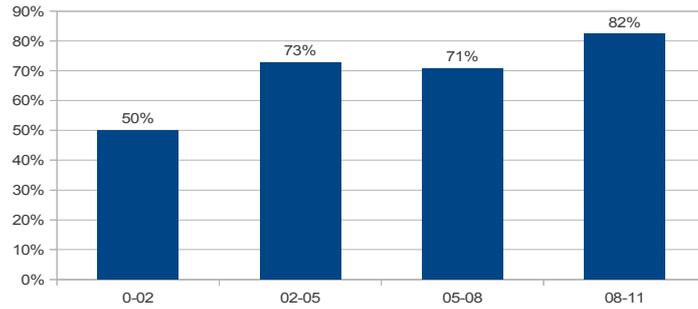
Figure 14: SDLR Survey Result: Length of Service Grouping

However, this relationship was not linear and when scores were plotted against actual length of service there was no significant difference in scores (Figure 15).
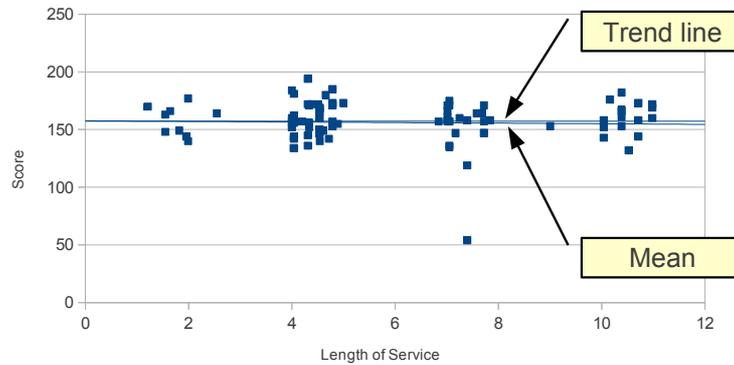
Figure 15: SDLR Survey Result: Length of Service v Score

e.   There was only a small difference between the Branch Groupings (Error: Reference source not found). The Operations Branch (69%), was the least successful and the Technical Branches were the most likely to pass (75%).
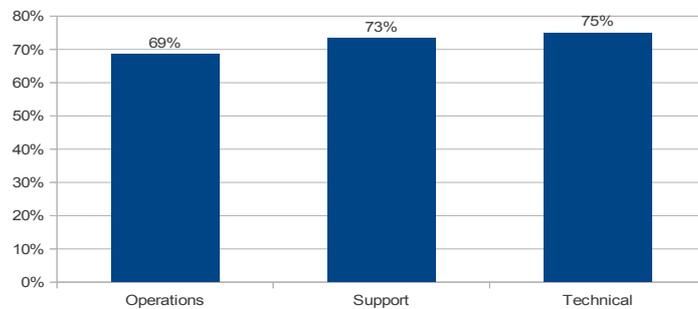
Figure 16: SDLR Survey Result: Branch Grouping

f. As expected more officers (82%) achieved the pass mark than NCOs (73%) and ratings (67%) (Figure 17). This probably reflects the differing educational requirements for these groups.
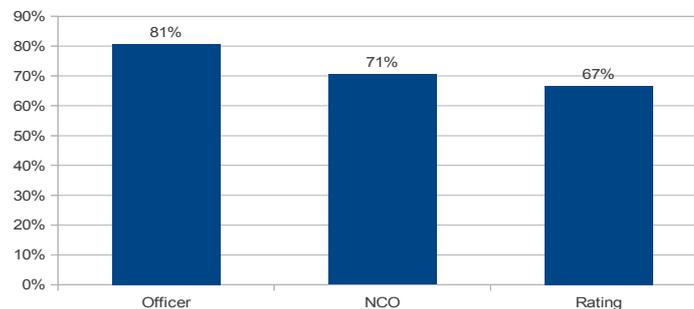
Figure 17: SDLR Survey Result: Rank Grouping

g. Finally, those in a stable relationship (married, de facto) showed a distinct difference from those who were single, separated or divorced (79% v 64% respectively) (Figure 18).
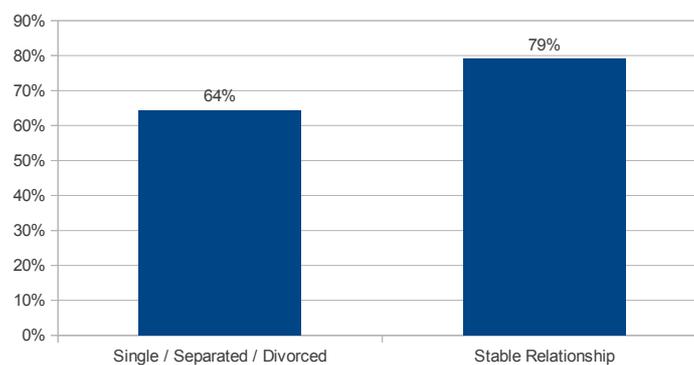
Figure 18: SDLR Survey Result: Relationship Grouping

The implication of the above findings is that the implementation of self-directed learning must be very carefully considered and that the most accurate predictor of readiness is educational achievement. New entrant ratings who are single and male, with low educational achievement, are less likely to be fully suited to self-directed learning but still more than half are suited to this type of training delivery. As such it is essential to provide sympathetic and easily accessible support mechanisms or alternative strategies for those students who may struggle.

9.   Conclusions

9.1   Pilot

The pilot survey was conducted successfully and is suitable, with a few amendments and corrections, for wider NZDF implementation. In particular some examples given in Part 1 will have to be modified if the questions are to be understood by Army and Air Force uniformed personnel. Part 1 of the survey form will need to be reviewed in full to ensure that it is appropriate for the civilian workforce.

Large scale NZDF wide surveys could be more efficiently conducted if the NZDF Survey Tool was in service.

This pilot was significantly delayed by the NZDF approval process. Defence Force Order 21/2002 (Authority to Conduct Personnel Research) (17) needs to be re-written to reflect the changed NZDF organisation and responsibilities and the approval process optimised to avoid unnecessary delays to future personnel research.

9.2   Survey

Although all those surveyed had access to the internet (and associated tools such as Facebook, Twitter, Internet TV and Skype), it is not utilised by the RNZN for the delivery of training or learning. This would seem to be a missed opportunity.

The LMS is only available in shore based units via DIXS. It is not available to NZDF personnel in deployed units (such as ships) or, via the internet, to personnel who wish to study at home. This is contrary to the LMS investment case (23).

Self-directed learning is suitable for use in many situations but alternative strategies or additional support must be available for those who need it.

10.   Recommendations

It is recommended that:

    a.   The use of self-directed learning is encouraged where appropriate, but that alternative strategies, support and encouragement are provided for the minority who are not suited this form of training.

    b.   The utility of tools such as Twitter and Facebook and, to a lesser extent, Skype and internet TV for the delivery of training is investigated.

    c.   The LMS should be provided to those at sea, in other deployed units and via the internet if it is to achieve its potential.

    d.   This survey be conducted on the entire NZDF including the civilian workforce in 2013 and repeated annually until 2017 in order that changing trends in the use of technology can be identified.

e. Defence Force Order 21/2002 (Authority to Conduct Personnel Research) is re-written to reflect the changed NZDF organisation and responsibilities, and the approval process optimised to avoid unnecessary delays to future personnel research.

APPENDIX 1 – SURVEY FORM

LEARNER PROFILES SURVEY

This survey is gathering information with the aim to improve the delivery of Defence Force training and learning.

The survey is divided into two parts. The purpose of Part 1 is to find out how technology is used for your training, what tools you are using, what tools are available to you and what you think about the use of technology. Part 2 is designed to indicate what style of instruction might be suitable for service personnel of your experience, rank and trade.

The information we collect will be held at DTA[7] in confidence. Once analysis has been completed no-one will be able to identify individuals in the final report. If you have any questions or concerns do not hesitate to contact me, details below.

Please take a little time to complete the survey, be honest, there are no right or wrong answers and the whole thing should only take about 15-20 minutes.

The results of the survey, which will cover all services and rank levels, will be published as a DTA report and used to better inform the training process. We may share our findings with researchers in UK, Canada, USA and Australia under The Technical Cooperation Program.

You don't have to take part at all – we would really appreciate it if you did – but, if you decide not to, that's fine there will be no come back.

By completing the survey you have consented to take part.

> **As a way of thanking you we shall be entering everyone who completes a survey into a prize draw for a $500 smartphone or tablet PC.**

This research is being conducted by

Human Systems Group
Defence Technology Agency

If you want to know more please do not hesitate to contact:

James Kerry   Email:j.kerry@dta.mil.nz   DTelN:(349) 7444

> This survey is administered in accordance with the **Privacy Act (1993)** and **guidelines for research practice** outlined in **DFO 21/2002**. The information collected from respondents will be treated strictly as "in-confidence". The information you provide will never be used to evaluate your performance, and legislation prohibits us from publishing information that identifies you.

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[7]   DTA = Defence Technology Agency, the science and research organisation of the NZDF.

PART 1

Please insert your service number [   ]

Section A – Education[8]

N°	Item	
1	**What is your highest secondary school qualification?** *(Select only one button)*	
	– No Qualification	
	– NZ School Certificate in one or more subjects *or* National Certificate level 1 *or* NCEA level 1	
	– NZ Sixth Form Certificate in one or more subjects *or* National Certificate level 2 *or* NZ UE before 1986 in one or more subjects *or* NCEA level 2	
	– NZ Higher School Certificate *or* Higher Leaving Certificate *or* NZ University Bursary / Scholarship *or* National Certificate level 3 *or* NCEA level 3 *or* NZ Scholarship level 4	
	– Other secondary school qualification gained in NZ. Print what it is:	
	– Overseas Secondary School Qualification	

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[8] This a standard NZ Census Question. Answers will be collated iaw the 'Statistical standard for qualifications'
http://www.stats.govt.nz/surveys_and_methods/methods/classifications-and-standards/classification-related-stats-standards/qualifications.aspx

N°	Item	
2	Apart from secondary school, do you have another completed qualification?	
	DON'T count qualifications that take less than 3 months of full-time study to get.	
	Yes ⟹ go to 3 No ⟹ go to 4	
3	Print your highest qualification and the main subject, for example:	
	Qualification – TRADE CERTIFICATE Subject – ELECTRICAL ENGINEERING	
	– Qualification	
	– Subject	

Section B – Access to Technology

This section concerns the access you have to the **defence network** (Intranet) and the **World Wide Web** (Internet). Your answers will assist the provision of the right training tools using the most appropriate media.

Nº	Item	
4	Where do you access the **defence network** (Intranet)? *(please tick as many as apply)*	
	– Place of work (office, workshop etc.)	
	– Defence Force library	
	– Defence Force classroom	
	– Recreation area (includes ship messes and base accommodation)	
	– Home	
	– Other(s) - please give details:	
5	Where do you access the **World Wide Web** (internet)? *(please tick as many as apply)*	
	– Defence Force library	
	– Defence Force classroom	
	– Place of work (office, workshop etc.)	
	– Recreation area (includes ship messes and base accommodation)	
	– Public wireless	

N°	Item	
	– Public library	
	– Mobile broadband (e.g. 3G phone)	
	– Home - broadband	
	– Home - dialup	
	– I have access to the world wide web (internet) but don't use it	
	– I don't have access to the world wide web (internet)	
	– Other(s) - please give details:	

Section C – Use of Technology for Defence Force training

During the last 12 months, when receiving Defence Force training, what technology have you used? The Defence Force has invested in a variety of training technologies; this section is intended to measure how intensively that technology is being used.
For the purposes of this section training is considered in two parts:

- Formal professional career courses – related either directly to your trade or advancement and,

- Miscellaneous training – (e.g. HR Systems Training, Military Justice Training, SAP Intranet Training Site, Microsoft elearning Library)

Training conducted outside defence (e.g. at university or overseas) should not be included in these answers

(Please select the most appropriate button)

No	Item	None	1-2	3-4	5+	
6	In the last 12 months how many courses (total of professional and miscellaneous) have you undertaken?					
		None	1-2	3-4	5+	All
7	In the last 12 months how many of your professional course modules have been conducted using simulators (e.g. bridge simulator, flight simulator, weapons simulator)?					
8	In the last 12 months how many of your professional course modules have been conducted using the **defence network** (Intranet)?					
9	In the last 12 months how many of your professional course modules have been conducted using the **World Wide Web** (internet)?					
10	In the last 12 months how many miscellaneous training modules have been conducted using the **defence network** (Intranet)?					
11	In the last 12 months how many miscellaneous training modules have been conducted using the **World Wide Web** (internet)?					

No	Item	Never	Occasionally	Monthly	Weekly	Daily
12	Please indicate how often in the last 12 months you used each of the following tools provided by the Defence Force in relation to your training:					
	– Simulations, games (either on the **defence network** or standalone systems or simulators)					
	– **Defence network** course website or SharePoint site or learning management system (LMS)(e.g. lecture notes, activities, PowerPoint slides, video clips and e-learning)					
	– Online Discussion Groups utilising the Defence Force learning management system (LMS)					
	– Other **defence network** (Intranet) sites					
	– Online Assessments (e.g. Multiple choice quizzes)					
	– Defence email (e.g. MS Outlook)					
	– Word processing (e.g. MS Word)					
	– Spreadsheets (e.g. MS Excel)					
	– Presentation software (e.g. MS PowerPoint)					
	– Video Conferencing					
	– Telephone calls mobile or landline					
	– Text Messaging					
	– Other(s) - please give details:					

Section D – Use of personal technology to supplement Defence Force training / learning

What additional electronic media do you use to supplement your formal training? The aim of this section is to find out to what extent Defence Force training is helped by the informal use of personal tools and equipment.

(Please select the most appropriate button)

N°	Item	Never	Occasionally	Monthly	Weekly	Daily
13	Please indicate those soft tools, **NOT** provided by the Defence Force, you use to help you with your Defence Force training / study.					
	– Social networking (e.g. Facebook, MySpace)					
	– Weblog or Blog or microblog					
	– Telephone calls mobile or landline					
	– Text Messaging					
	– Virtual Worlds (e.g. Second Life, SmallWorlds))					
	– Other simulations, games (either PC, games console or online)					
	– Video/audio clips					
	– Video conferencing (e.g. Skype)					
	– Internet forums (also known as message boards or discussion boards)					
	– Podcasts					
	– Personal email					

N°	Item	Never	Occasionally	Monthly	Weekly	Daily
	– Other software **NOT** provided by the Defence Force - please specify:					
	– Other internet websites (e.g. Google, Wikipedia, YouTube) - please specify:					

N°	Item	Never	Occasionally	Monthly	Weekly	Daily
14	Please indicate equipment, **NOT** provided by the Defence Force, which you use to help with your Defence Force training / study.					
	– Mobile Phone (any type)					
	– Dedicated Ereader (e.g. Sony PRS650, Kindle, Kobo)					
	– PC / Mac / Laptop / Notebook Computer / iPad or similar					
	– Standalone portable media player (e.g. iPod, mp3 / mp4 player)					
	– Standalone digital camera (not mobile phone)					
	– Other(s) - please give details:					

N°	Item	Yes	No	Don't know		
15	If not already being used, do you think it would be beneficial to use any of these tools/software in your training? Please give details:					

Section E – Personal use of Technology

How do you use technology outside of work? This section relates to your use of technology for anything other than work. The purpose is to gain an understanding of how immersed Defence Force personnel are in current technology.

No	Item	
16	Outside work, which of the following do you use regularly? *(please tick as many as apply)*	
	– Mobile Phone (e.g. 2G with text and voice)	
	– Advanced Mobile Phone (e.g. 3G with internet access and basic applications)	
	– Smartphone (such as iPhone (e.g. with GPS, operating system (such as iOS, Android, Windows Phone), touch screen and/or full QWERTY keyboard))	
	– Standalone portable media player (not mobile phone) (e.g. iPod, mp3 player)	
	– Personal Computer (e.g. Mac or PC, desktop or laptop)	
	– iPad or similar	
	– Ereader (e.g. Kindle, Kobo)	
	– Games Console (e.g. Xbox, Playstation, Nintendo)	
	– Portable Games Console (e.g. Gameboy, Nintendo DS, SonyPSP)	
	– Standalone digital still camera (not mobile phone)	
	– Standalone digital video camera (not mobile phone or stills camera)	
	– Other(s) - please give details:	

N°	Item	Never	Occasionally	Monthly	Weekly	Daily
17	How often do you use **World Wide Web** (internet) services outside work? *(Please select the most appropriate button)*					
	– Music (e.g. iTunes, LastFM, digiRAMA, radio, etc)					
	– Photo upload and sharing (e.g. Flickr)					
	– Video upload and sharing (e.g.YouTube)					
	– Internet TV or IPTV (e.g. TVNZ OnDemand, TV3 On Demand, Ziln, Ecast)					
	– Blogging (e.g. Blogger, Twitter, Tumblr)					
	– Social networking (e.g. Facebook, MySpace)					
	– Web Calling, Voice and Video Instant Messaging and / or Web Conferencing (e.g. Skype, Windows Live Messenger)					
	– File sharing (e.g. BitTorrent, LimeWire, eMule)					
	– Internet forums (also known as message boards or discussion boards)					
	– Wikis (e.g. Wikipedia)					
	– Virtual Worlds for social activities and learning (e.g. Second Life, SmallWorlds)					
	– Virtual worlds for gaming (e.g. World of Warcraft, Free Realms, Guild Wars)					
	– Other(s) - please give details:					

Section F – Use of technology.

This section asks your opinion about the use of technology for training in the Defence Force.

By 'technology' we mean **World Wide Web** (internet) and **Defence Network** (Intranet), modern hardware, computer based training and simulators.
(Please select the most appropriate button)

N°	Item	Strongly disagree	Disagree	Unsure	Agree	Strongly agree
18	The Defence Force could use technology more effectively for training					
19	I primarily use technology during training to improve the presentation of my work (e.g. for presentations and word processing).					
20	The use of technology during training provides more opportunities for practice.					
21	The use of technology in my training met my expectations.					
22	Training that takes place on the **defence network** (Intranet) or **World Wide Web** (internet) allows me to use my time more effectively.					
23	The use of technology in training has helped me better understand complex or abstract concepts.					
24	The use of technology in my training has increased my interest in the subject matter.					
25	Training that uses technology is more likely to focus on real-world tasks and examples.					
26	Course activities that require me to use technology engage me more.					
27	I get better results during training that uses technology.					
28	The Defence Force needs to give me more formal training for the technology used in instruction.					

PART 2

SELF DIRECTED LEARNING READINESS
(Fisher, Tague, King, 2000)

The following is a bank of items perceived to reflect the attributes, skills and motivational factors required of self directed learners.

Please evaluate each item regarding **the degree the item measures a characteristic of yourself**.

No	ITEM	Strongly disagree	Disagree	Unsure	Agree	Strongly agree
29	I solve problems using a plan					
30	I prioritise my work					
31	I do not manage my time well					
32	I have good management skills					
33	I set strict time frames					
34	I prefer to plan my own learning					
35	I am systematic in my learning					
36	I am able to focus on a problem					
37	I need to know why					
38	I critically evaluate new ideas					
39	I prefer to set my own learning goals					
40	I learn from my mistakes					
41	I am open to new ideas					
42	When presented with a problem I cannot resolve, I will ask for assistance					
43	I am responsible					
44	I like to evaluate what I do					
45	I have high personal expectations					

No	ITEM	Strongly disagree	Disagree	Unsure	Agree	Strongly agree
46	I have high personal standards					
47	I have high beliefs in my abilities					
48	I am aware of my own limitations					
49	I am confident in my ability to search out information					
50	I do not enjoy studying					
51	I have a need to learn					
52	I enjoy a challenge					
53	I want to learn new information					
54	I enjoy learning new information					
55	I set specific times for my study					
56	I am self disciplined					
57	I like to gather the facts before I make a decision					
58	I am disorganised					
59	I am logical					
60	I am methodical					
61	I evaluate my own performance					
62	I prefer to set my own criteria on which to evaluate my performance					
63	I am responsible for my own decisions/actions					
64	I can be trusted to pursue my own learning					
65	I can find out information for myself					
66	I like to make decisions for myself					

No	ITEM	Strongly disagree	Disagree	Unsure	Agree	Strongly agree
67	I prefer to set my own goals					
68	I am not in control of my life					

That's it!

THE END

Thank you for completing this survey

APPENDIX 2 – GROUPS AND SUB-GROUPS FOR ANALYSIS

GROUPING	SUB-GROUP	DATA	No
		TOTAL	93
Rank Grouping	Officer	CDR LTCDR LT SLT MID ENS CHAPCL2	31
	NCO	WO CPO PO	17
	Rating	L A	45
Branch Grouping	Operations	GLO GLP GLX GLXO GLXP OPS	35
	Support	BR CHAP GLS MED SPT	30
	Technical	GLE TECH	28
Gender	Female	F	24
	Male	MM	69
Education	Level 0-3	No Qualification Level 1 Certificate Level 2 Certificate Level 3 Certificate	23
	Level 4-6	Level 4 Certificate Level 5 Diploma/Certificate Level 6 Graduate Certificate Level 6 Diploma/Certificate	55

GROUPING	SUB-GROUP	DATA	No
	Level 7-9	Bachelor Degree, Level 7 Graduate Diploma/Certificate Level 7 Diploma/ Certificate Postgraduate Diploma/Certificate Bachelor Honours Masters Degree	14
	Level 10+	Doctorate Degree	1
	OSSE	Overseas Secondary School Qualification	0
Relationship	Single / Separated / Divorced	Divorced Separated Single Widower	45
	Stable Relationship	Civil Union De Facto Married Recognised Relationship	48
Length of service	0-02 years		8
	02-05 years		44
	05-08 years		24
	08-11 years		17
	11+ years		0
Generation	Baby Boomers	Born 1946 - 1964	12
	Generation X	Born 1965 -1980	14
	Millennial	Born 1981- 2000	67

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13. ABSTRACT

This report describes a pilot study conducted with RNZN uniformed personnel to understand how they access and use technology for training and recreation, at work and at home. The study also assesses the potential of RNZN personnel to undertake self-directed learning. An online survey was devised incorporating the Self-Directed Learning Readiness Survey developed at the University of Sydney. The construction and administration of the survey form is described together with the results. The pilot survey was a success but the process has highlighted some technical issues in the ability of NZDF to deliver surveys digitally. The results indicate almost universal access to the internet, that the learning management system is being used but that the majority are not using RNZN simulators. Most RNZN personnel used tools such as Twitter and Facebook regularly. Skype and internet TV were used to a lesser extent but virtual worlds were not popular. Most of those surveyed were suited to self-directed learning but a substantial minority (28%) were not and would require alternative strategies, or additional support and encouragement, to achieve their learning goals.

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