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Appendix A Researcher-respondent agreement

RESEARCHER-RESPONDENT AGREEMENT

Allow me to introduce myself: My name is C.G. (Ian) Joubert. I am conducting a post-graduate research project as a student of the University of Pretoria. Your assistance is requested in this regard.

As the **Researcher** I wish to inform you, the **Respondent**, that I intend to establish whether self-directed learning principles and strategies are present and applicable in the air traffic control team-based learning context, to differentiate between intentional and unintentional levels of self-directed team learning, and to describe the role and contribution of self-directed team learning in the air traffic control workplace.

The problem statement for this proposed study is: **What impact does self-directed team learning have within the South African Air Force air traffic control work environment?**

The research project will examine the nature, characteristics and impact of self-directed team learning in the South African Air Force air traffic control workplace. The primary focus of the study will be on tracing the impact of self-directed team learning in an air traffic control environment.

During the investigation of the research problem stated above I intend to:

- trace the impact of self-directed team learning strategies in the air traffic control workplace;
- identify, describe and analyse self-directed team learning strategies in the air traffic control workplace;
- challenge the boundaries of theory, research, practice and assumptions associated with self-directed team learning within the air traffic control workplace;
- generate knowledge that will be useful to other disciplines that rely on effective teamwork, both within and outside of the aviation environment; and
- contribute to local and international literature on self-directed team learning within the air traffic control work environment.

I undertake to focus on the research questions and will not interfere in any manner that may jeopardize the integrity of data and the study as a whole. I acknowledge that your participation is voluntarily. There will be no unpleasant or damaging effects on the individual, the team and the setting (workplace). I will communicate the aim, objectives, nature and future use of findings to you and all other participants prior to commencement of data collection activities. I acknowledge and respect your participation as being voluntary.

I will comply with the listed ethical issues.

- Protection of the rights of human subjects by not causing emotional harm, by not infringing their right to maintain self-respect and human dignity.
- Provide all the facts without distortion or misrepresentation.
- Avoid being biased in the interpretation and presentation of data.
- Only use measurements that are suited to the research problem.
- To not knowingly ascribe greater confidence than the measurements warrant.
- Reporting of conflicting evidence.
- Reporting of any flaws or limitations in the research.

No reasons can be cited as necessary for disclosing the identity of participants, therefore:

- I will ensure confidence by not disclosing your identity and the identity of other respondents; and
- research sites will receive random numbers in order to protect sites and individuals.

RESEARCHER-RESPONDENT AGREEMENT

My visit to this SA Air Force Air Traffic Control centre has been authorized by corporate and unit management. The importance of air traffic control safety needs and requirements are fully realized by me – these will be respected at all times and it is accepted that no infringement will be tolerated. No unprofessional behaviour will be required from you as respondent.

I will provide all participants with an opportunity to learn from their participation, therefore the outcome of my study will be made available to all participants and will be communicated by means of internal organizational means.

Data collection will be performed by means of:

- an interview with you;
- a focus group interview in which you may participate;
- a Learning Approach Questionnaire (LAQ) completed by you; and
- a questionnaire completed by you.

*This agreement is entered into by the **Researcher**, Christiaan Gerhardus Joubert, being a University of Pretoria post-graduate student, student number 24218783 at the _____
Air Traffic Control Centre on _____; and
the **Respondent**, _____ (name& surname),
force number _____ military rank _____ as an
acknowledgement of providing my (respondent) informed consent to voluntary participate in this research project in accordance with the conditions and requirements presented and contained in this agreement.*

Signed by the **Researcher**: _____

Signed by the **Respondent**: _____

Witnessed by: _____ Signature: _____

Date: _____



Appendix B Researcher task/activity guide - individual interviews

RESEARCHER TASK/ACTIVITY GUIDE

INDIVIDUAL INTERVIEWS

PRE-INTERVIEW ACTIVITIES

Ensure that the respondent have voluntarily provided his/her consent by means of a completed Researcher-Respondent Agreement.

Have note paper and a pen ready for the respondent.

Have the questions ready for the respondent.

Arrange not to be disturbed during the interview.

Check that the tape recorder is serviceable and load an audio cassette that will record the interview.

Open a page in the journal and register:

- date & time; and
- respondent number

INTERVIEW

Thank the respondent for his/her attendance.

Provide the following information to the respondent:

This is an in-depth, face-to-face interview that will enable me to gather self-directed team information from you, as an air traffic controller. I will conduct a one-to-one interview with every participating air traffic controller from this Air Traffic Control Centre. I am making use of three open-ended questions, thus allowing for limitless response from you. I will also ask the same questions during each interview. This will allow for reliability, consistency and ease of data analysis. This individual interview will allow me to gain a deeper understanding of the role of the individual in the team learning initiative, levels of intentional and unintentional learning, the contribution from other team members with reference to learning, and the impact/value of self-directed team learning. I will use interview results (qualitative data) to assist in the creation of deeper understanding. This interview should not exceed one hour. All interviews will be audio taped and I will prepare transcripts of these confidential interviews.

Emphasise to the respondent that:

There are no correct answers to the three questions.

RESEARCHER TASK/ACTIVITY GUIDE

You are welcome to make notes on the paper provided to guide your thought and conversation, prior to and during the discussion.

You will receive a written version of the question posed and you will be allowed to study the question prior to providing a response.

Your honest responses are requested.

Identity of respondents and the centre will remain confidential.

Transcribed information will be made available to the respondent for validation purposes.

Determine the need for a warm-up question (when required ask: “What do you enjoy about air traffic control?”).

Activate the tape recorder.

Ask the first question and hand the question to the respondent.

Note all own prompts and notes in the journal.

Do not interrupt (unless necessary).

Seek clarity when required and probe for depth when required.

Continue with the next two questions, conduct to be similar to question 1.

Note all own prompts and notes in the journal.

Thank the respondent.

Deactivate the tape recorder.

Obtain contact details from respondents to which transcribed info can be forwarded and note in the journal.

Collect the question cards.

QUESTIONS

1. **Explain with the aid of examples how teamwork influences the outcome of the air traffic control service provided by your centre?**
2. **Explain with the aid of examples how learning from air traffic control teamwork experiences influences your own performance?**
3. **Explain with the aid of examples how learning from experience influences air traffic control teamwork?**

RESEARCHER TASK/ACTIVITY GUIDE

Each respondent will be handed a card, similar to the examples below, containing the question that will receive attention. This question card is handed to the respondent when the specific question is asked by the researcher.

1. Explain with the aid of examples how teamwork influences the outcome of the air traffic control service provided by your centre?

2. Explain with the aid of examples how learning from air traffic control teamwork experiences influences your own performance?

3. Explain with the aid of examples how learning from experience influences air traffic control teamwork?



Appendix C Researcher task/activity guide – focus group interviews

RESEARCHER TASK/ACTIVITY GUIDE

FOCUS GROUP INTERVIEWS

PRE-FOCUS GROUP INTERVIEW ACTIVITIES

Ensure that the respondents have voluntarily provided their consent by means of a completed Researcher-Respondent Agreement.

Have the questions ready for the respondents.

Arrange not to be disturbed during the interview.

Ensure familiarity of respondents with their respondent numbers.

Check that the tape recorder is serviceable and load an audio cassette that will record the interview.

Open a page in the journal and register:

- date & time; and
- respondent numbers

INTERVIEW

Thank the respondents for their attendance.

Provide the following information to the respondent:

I have identified the need to obtain learner information in terms of preferences, dislikes, and processes during a relatively free discussion. Focus groups are suggested as a means to create a social environment in which individual members are stimulated by the perceptions, opinions and ideas of each other, which in turn, increase the richness of data. I have decided to use the focus-group technique to gather qualitative data and to gain deeper understanding of learner behaviour, to test preliminary information, and to test ideas. The use of focus groups will enable me to capitalize on the group interaction around a topic.

Each focus group interview should not exceed one hour. Focus group interviews will be audio taped and I will prepare transcripts of these confidential interviews.

I expect focus groups to share individual and team learning experiences, techniques used to learn, comments relating to the role of the team in terms of intentional and unintentional learning, value and contributions from different team members and team roles, and the perceived value of the learning focus. I will use focus group results to assist in the creation of deeper understanding.

I will assume the role of facilitator, in order to maintain a supportive and non-evaluative environment.

RESEARCHER TASK/ACTIVITY GUIDE

Emphasise to the respondents that:

There are no correct answers to the three questions.

Only one person at a time should talk.

When responding state your unique number first in order to assist with the transcription.

Each respondent will receive a written version of the question posed and they will be allowed to study the question prior to providing a response.

Their honest responses are requested.

Identity of respondents and the centre will remain confidential.

Transcribed information will be made available to respondents for validation purposes.

Ensure respondents know their unique numbers.

Determine the need for a warm-up question (when required ask: "What satisfaction does air traffic controlling provide to you as a team?").

Activate the tape recorder.

Ask the first question and hand the question to the respondents.

Note all own prompts and notes in the journal.

Do not interrupt (unless necessary).

Seek clarity when required and probe for depth when required.

Continue with the next two questions, conduct to be similar to question 1.

Note all own prompts and notes in the journal.

Upon completion of the interview invite last comments and thank the audience for their participation.

Thank the respondents.

Deactivate the tape recorder.

Obtain contact details from respondents to which transcribed info can be forwarded and note in the journal.

Collect question cards.

RESEARCHER TASK/ACTIVITY GUIDE

QUESTIONS

1. What can a team member, joining the air traffic control team, expect from the team?
2. How is individual and collective learning planned and executed at your air traffic control centre?
3. How can air traffic control team learning at your centre be improved?

Each respondent will be handed a card, similar to the examples below, containing the question that will receive attention. This question card is handed to the respondent when the specific question is asked by the researcher.

1. What can a team member, joining the air traffic control team, expect from the team?

2. How is individual and collective learning planned and executed at your air traffic control centre?

3. How can air traffic control team learning at your centre be improved?



Appendix D Transcript cover letters

9 Tieroogpark
Hoewe Street
Elarduspark
0181
03 Jan 2006

Dear Respondent

TRANSCRIPT: SELF-DIRECTED TEAM LEARNING RESEARCH PROJECT

Attached please find your transcript copy of the individual interview conducted by Ian Joubert in which you participated.

You are requested to check this transcript and ensure that the transcript content is an accurate reflection of your thoughts, perceptions, opinions and observations as expressed during said individual interview. Grammar and spelling corrections are not required.

This individual interview data will be categorized and analysed and patterns of similarity and differences will be explored by me in order to explain the impact of self-directed team learning in an ATC environment. I wish to reiterate that your identity will remain known only to me, and will not be disclosed in any form in the final research report. Actual individual interview text will most probably not be used in the final report, however, when included all attempts will be made to ensure protection of your identity and that of the ATSU that you represent.

You are most welcome to provide me with further information and/or comments in response to the individual interview questions stated if you wish. Any changes/amendments to the transcript and/or further information/comments must reach me by **31 January 2006**. Fax and/or e-mail responses are preferred.

Contact information:

- Fax: 011 390 1209 (clearly indicate: For attention Ian Joubert)
- Telephone: 011 570 0400
- Mobile: 083 231 6246
- e-mail: ianj@atns.co.za

A no-return action by 31 January 2006 will be regarded as an indication of agreement with the attached transcript content.

Your assistance is greatly appreciated.

Kind regards

Ian Joubert

9 Tieroogpark
Hoewe Street
Elarduspark
0181
03 Jan 2006

Dear Respondent

TRANSCRIPTS: SELF-DIRECTED TEAM LEARNING RESEARCH PROJECT

Attached please find your transcript copies of the individual interview and focus-group interview conducted by Ian Joubert in which you participated.

You are requested to check these transcripts and ensure that the transcript contents are an accurate reflection of your thoughts, perceptions, opinions and observations as expressed during said interviews. Grammar and spelling corrections are not required.

This individual interview and focus group interview data will be categorized and analysed and patterns of similarity and differences will be explored by me in order to explain the impact of self-directed team learning in an ATC environment. I wish to reiterate that your identity will remain known only to me, and will not be disclosed in any form in the final research report. Actual interview text will most probably not be used in the final report, however, when included all attempts will be made to ensure protection of your identity and that of the ATSU that you represent.

You are most welcome to provide me with further information and/or comments in response to the individual interview and focus group interview questions stated if you wish. Any changes/amendments to these transcripts and/or further information/comments must reach me by **31 January 2006**. Fax and/or e-mail responses are preferred.

Contact information:

- Fax: 011 390 1209 (clearly indicate: For attention Ian Joubert)
- Telephone: 011 570 0400
- Mobile: 083 231 6246
- e-mail: ianj@atns.co.za

A no-return action by 31 January 2006 will be regarded as an indication of agreement with the attached transcript contents.

Your assistance is greatly appreciated.

Kind regards

Ian Joubert



Appendix E Self-directed Team Learning Questionnaire (SDTLQ)

SELF-DIRECTED TEAM LEARNING QUESTIONNAIRE

THANK YOU FOR YOUR WILLINGNESS TO COMPLETE THIS QUESTIONNAIRE.

The purpose of this questionnaire is to trace the impact of self-directed team learning within the South African Air Force air traffic control environment. It is important that you answer all the questions as honestly as possible. Your answers to this questionnaire will be treated as confidential.

Read each question carefully and mark your answers by **circling** the appropriate **shaded** number in the box. For example:

Example 1

Please use the following code to answer this question

- 1 – Always
- 2 – Frequently
- 3 - Rarely
- 4 - Never

I share my ideas with other people	①	2	3	4
------------------------------------	---	---	---	---

Example 2

	ATC	ATSA
Training received by me	①	2

If you make a **mistake**, simply **blacken** in the box where the error is and then circle the appropriate shaded number in the alternate box. For example:

Example 1

Please use the following code to answer this question

- 1 – Always
- 2 – Frequently
- 3 - Rarely
- 4 - Never

I share my ideas with other people	①	2		4
------------------------------------	---	---	--	---

Example 2

	ATC	ATSA
Training received by me		②



SELF-DIRECTED TEAM LEARNING QUESTIONNAIRE

SECTION A: PERSONAL DETAIL

Respondent number

V1 1

Question 1

What is your gender?

Male	1
Female	2

V2 3

Question 2

At which air traffic control centre are you stationed?

FALW	1
FALT	2
FAHS	3

V3 4

Question 3

What is your military rank?

Non-Commissioned Officer	Candidate Officer	Second Lieutenant	Lieutenant	Captain	Major	Lieutenant-Colonel
1	2	3	4	5	6	7

V4 5

Question 4

Which of the following **validations** do you hold at this air traffic control centre?

Flight information service	1
Ground control	2
Aerodrome control	3
Approach control	4
Ground controlled approach	5

V5 6
V6 7
V7 8
V8 9
V9 10

Question 5

How many years have you been employed at this centre?

Less than one year	1
More than one year but less than three years	2
More than three years	3

V10 11



Question 6

What is your current position?

Command & Control Assistant	Air traffic controller	Senior air traffic controller	Chief air traffic controller
1	2	3	4

V11 12

SECTION B: SELF-DIRECTED TEAM PERFORMANCE

Question 7

Please use the following code to answer this question

- 1 – Always
- 2 – Frequently
- 3 - Rarely
- 4 - Never

Team work characteristics

When involved in air traffic control teamwork at this air traffic control centre I have noticed that (respond to all the options provided):

conflict occurs between team members	1	2	3	4
pressures to conform are common	1	2	3	4
power is shared amongst team members	1	2	3	4
certain air traffic control roles are considered more important than others	1	2	3	4
the team is more important than team members	1	2	3	4
individual contributions are encouraged	1	2	3	4
the team covers up blunders/mistakes	1	2	3	4
the team is willing to learn as a result of experience	1	2	3	4
internal commitment amongst members is present	1	2	3	4
team members handle criticism well	1	2	3	4
misunderstandings prevail	1	2	3	4
team members act defensively when confronted	1	2	3	4
team members attempt to understand why people behave in certain ways	1	2	3	4
the pace set by the team meets the needs of all team members	1	2	3	4

V12 13
 V13 14
 V14 15
 V15 16
 V16 17
 V17 18
 V18 19
 V19 20
 V20 21
 V21 22
 V22 23
 V23 24
 V24 25
 V25 26

Question 8

Self-efficacy

Which one of the following statements accurately describes your air traffic control team's performance during difficult controlling periods/tasks?

(select only **one** option)

Team performance is characterised by setting goals and involvement by all team members in pursuit of these goals	1
Team performance is characterised by setting goals, however, not all team members pursue these goals	2

V26 27

Question 9

Please use the following code to answer this question

- 1 – Always
- 2 – Frequently
- 3 - Rarely
- 4 - Never

Team performance activities

How often do the following air traffic control team performance activities take place at this centre? (respond to all the options provided):

gathering of information	1	2	3	4
reporting of information	1	2	3	4
creating new ideas	1	2	3	4
experimenting with new ideas	1	2	3	4
exploring new opportunities	1	2	3	4
assessing the applicability of new work processes	1	2	3	4
establishing new ways of making things work	1	2	3	4
implementing new ways of making things work	1	2	3	4
delivering safety focused outputs	1	2	3	4
continuously checking the working of the air traffic control system	1	2	3	4
upholding air traffic control standards and processes	1	2	3	4
safeguarding air traffic control standards and processes	1	2	3	4
coordinating the work of others	1	2	3	4
integrating the work of others	1	2	3	4

V27	<input type="checkbox"/>	28
V28	<input type="checkbox"/>	29
V29	<input type="checkbox"/>	30
V30	<input type="checkbox"/>	31
V31	<input type="checkbox"/>	32
V32	<input type="checkbox"/>	33
V33	<input type="checkbox"/>	34
V34	<input type="checkbox"/>	35
V35	<input type="checkbox"/>	36
V36	<input type="checkbox"/>	37
V37	<input type="checkbox"/>	38
V38	<input type="checkbox"/>	39
V39	<input type="checkbox"/>	40
V40	<input type="checkbox"/>	41



Question 10

Please use the following code to answer this question

- 1 – Always
- 2 – Frequently
- 3 - Rarely
- 4 - Never

Individual reflection

How often do you:

revisit an air traffic control shift in your mind and think about what actually happened during the shift?	1	2	3	4	V41	<input type="text"/>	42
think about ways to improve your air traffic control skills as a result of your opinion concerning your present performance?	1	2	3	4	V42	<input type="text"/>	43
think about ways to improve your air traffic control skills as a result of inputs received from others concerning your present performance?	1	2	3	4	V43	<input type="text"/>	44
think about the social relationships that you encounter in your work team?	1	2	3	4	V44	<input type="text"/>	45
think about your contribution to aviation safety?	1	2	3	4	V45	<input type="text"/>	46
think about your own personal values and their role in your work life?	1	2	3	4	V46	<input type="text"/>	47
think about the expectations of the aviation industry, your organisation, your centre and your team?	1	2	3	4	V47	<input type="text"/>	48

Question 11

Please use the following code to answer this question

- 1 – Always
- 2 – Frequently
- 3 - Rarely
- 4 - Never

Teamwork performance measures

How often do air traffic control teams at this centre use the following indicators to measure air traffic control teamwork performance (respond to all the options provided):

incident occurrences	1	2	3	4	V48	<input type="text"/>	49
accident occurrences	1	2	3	4	V49	<input type="text"/>	50
application of traffic separation standards	1	2	3	4	V50	<input type="text"/>	51
number of flight delays	1	2	3	4	V51	<input type="text"/>	52
efficient airspace utilisation	1	2	3	4	V52	<input type="text"/>	53
managing traffic capacity	1	2	3	4	V53	<input type="text"/>	54



Please use the following code to answer this question

- 1 – Always
- 2 – Frequently
- 3 - Rarely
- 4 - Never

Teamwork performance measures *(continued)*

How often do air traffic control teams at this centre use the following indicators to measure air traffic control teamwork performance (respond to all the options provided):

traffic sequencing abilities of the controllers	1	2	3	4
compliance with unit operational rules	1	2	3	4
quality of team support provided	1	2	3	4
individual contributions by team members	1	2	3	4
work overload occurrences	1	2	3	4
number of unnecessary requests made to pilots	1	2	3	4
handling of emergency situations	1	2	3	4
quality of radio-telephony practices	1	2	3	4
effectiveness of information (coordination) sharing	1	2	3	4
number of interpersonal conflict situations	1	2	3	4

V54		55
V55		56
V56		57
V57		58
V58		59
V59		60
V60		61
V61		62
V62		63
V63		64

Question 12

Please use the following code to answer this question

- 1 – Always
- 2 – Frequently
- 3 - Rarely
- 4 - Never

Team performance dynamics

How often is air traffic control team performance at this centre directed/facilitated/guided by (respond to all the options provided):

shared judgement calls	1	2	3	4
shared problem solving actions	1	2	3	4
shared decision-making abilities	1	2	3	4
shared situational awareness	1	2	3	4
similar skill levels	1	2	3	4
shared positive attitudes	1	2	3	4
trust amongst team members	1	2	3	4
shared information amongst team members	1	2	3	4

V64		65
V65		66
V66		67
V67		68
V68		69
V69		70
V70		71
V71		72



SECTION C: SELF-DIRECTED TEAM LEARNING

Question 13

Please use the following code to answer this question

- 1 – Always
- 2 – Frequently
- 3 - Rarely
- 4 - Never

Individual learning preferences

To what extent do you prefer to learn as a result of (respond to all the options provided):

novel, difficult and unfamiliar ATC problem situations	1	2	3	4
routine and expected ATC situations	1	2	3	4
familiar and trained-for ATC problem situations	1	2	3	4
curiosity	1	2	3	4
feedback received from others	1	2	3	4
your own diagnosis of your learning needs	1	2	3	4
a systematic and sequential learning plan that is provided to you	1	2	3	4

V72	<input type="text"/>	73
V73	<input type="text"/>	74
V74	<input type="text"/>	75
V75	<input type="text"/>	76
V76	<input type="text"/>	77
V77	<input type="text"/>	78
V78	<input type="text"/>	79

Question 14

Please use the following code to answer this question

- 1 – Always
- 2 – Frequently
- 3 - Rarely
- 4 - Never

Learning participation

How often do you participate in the following initiatives at this air traffic control centre (respond to all the options provided):

formal team discussion sessions	1	2	3	4
informal team discussions	1	2	3	4
formal individual feedback sessions (example: a structured one-to-one discussion)	1	2	3	4
informal individual feedback sessions (example: a semi-structured or unstructured one-to-one discussion)	1	2	3	4
setting of learning contracts/agreements	1	2	3	4
critically analysing and reflecting upon your own performance	1	2	3	4

V79	<input type="text"/>	80
V80	<input type="text"/>	81
V81	<input type="text"/>	82
V82	<input type="text"/>	83
V83	<input type="text"/>	84
V84	<input type="text"/>	85



Question 15

Individual workplace learning orientation

My own workplace learning experience is (select only **one** option):

inner-directed focused (relying only on myself to learn)	1
external directed focused (relying on others to assist with my learning)	2

V85 86

Question 16

Please use the following code to answer this question

- 1 – Always
- 2 – Frequently
- 3 - Rarely
- 4 - Never

Workplace training design

To what extent is air traffic control **training objectives** for the air traffic control team at this centre decided upon by the (respond to all the options provided):

chief air traffic control officer	1	2	3	4
senior air traffic control officer	1	2	3	4
air traffic control training officer	1	2	3	4
air traffic control team	1	2	3	4
individual air traffic controller	1	2	3	4

V86 87
V87 88
V88 89
V89 90
V90 91

Question 17

Please use the following code to answer this question

- 1 – Always
- 2 – Frequently
- 3 - Rarely
- 4 - Never

Workplace training implementation

How often do the following members present air traffic control **training initiatives** to the air traffic control team at this centre (respond to all the options provided):

chief air traffic control officer	1	2	3	4
senior air traffic control officers	1	2	3	4
air traffic control training officers	1	2	3	4
all air traffic control team members	1	2	3	4
individual air traffic controllers	1	2	3	4

V91 92
V92 93
V93 94
V94 95
V95 96



Question 18

Please use the following code to answer this question

- 1 – Always
- 2 – Frequently
- 3 - Rarely
- 4 - Never

Workplace training evaluation

How often do the following members **evaluate** air traffic control training initiatives presented to the air traffic control team at this centre (respond to all the options provided):

chief air traffic control officer	1	2	3	4	V96	<input type="text"/>	97
senior air traffic control officers	1	2	3	4	V97	<input type="text"/>	98
air traffic control training officers	1	2	3	4	V98	<input type="text"/>	99
all air traffic control team members	1	2	3	4	V99	<input type="text"/>	100
individual air traffic controllers	1	2	3	4	V100	<input type="text"/>	101

Question 19

Please use the following code to answer this question

- 1 – Always
- 2 – Frequently
- 3 - Rarely
- 4 - Never

Operational training characteristics

To what extent does air traffic control operational training at this centre, **excluding continuation training**, focus on (respond to all the options provided):

passing information to team members who need it, before they need it (a proactive approach)	1	2	3	4	V101	<input type="text"/>	102
identifying the need to assist other team members	1	2	3	4	V102	<input type="text"/>	103
encouraging team members to communicate their observations	1	2	3	4	V103	<input type="text"/>	104
encouraging team members to communicate their concerns	1	2	3	4	V104	<input type="text"/>	105
encouraging team members to communicate their suggestions	1	2	3	4	V105	<input type="text"/>	106
encouraging team members to communicate their requests	1	2	3	4	V106	<input type="text"/>	107
learning to adapt performance strategies quickly as a result of changing demands	1	2	3	4	V107	<input type="text"/>	108
learning to adapt performance strategies appropriately to changing task demands	1	2	3	4	V108	<input type="text"/>	109

Please use the following code to answer this question

- 1 – Always
- 2 – Frequently
- 3 - Rarely
- 4 - Never

Operational training characteristics (*continued*)

To what extent does air traffic control operational training at this centre, **excluding continuation training**, focus on (respond to all the options provided):

knowledge of tasks performed by all air traffic control positions at this centre	1	2	3	4	V109	<input type="text"/>	110
team situation awareness skills	1	2	3	4	V110	<input type="text"/>	111
stress coping strategies	1	2	3	4	V111	<input type="text"/>	112
getting to know my team members at a personal level	1	2	3	4	V112	<input type="text"/>	113
coordination activities and processes	1	2	3	4	V113	<input type="text"/>	114
fostering mutual trust	1	2	3	4	V114	<input type="text"/>	115
creating team cohesion	1	2	3	4	V115	<input type="text"/>	116

Question 20

Please use the following code to answer this question

- 1 – Always
- 2 – Frequently
- 3 - Rarely
- 4 - Never

Continuation training characteristics

To what extent does air traffic control continuation training at this centre, **excluding operational training**, focus on (respond to all the options provided):

passing information to team members who need it, before they need it (a proactive approach)	1	2	3	4	V116	<input type="text"/>	117
identifying the need to assist other team members	1	2	3	4	V117	<input type="text"/>	118
encouraging team members to communicate their observations	1	2	3	4	V118	<input type="text"/>	119
encouraging team members to communicate their concerns	1	2	3	4	V119	<input type="text"/>	120
encouraging team members to communicate their suggestions	1	2	3	4	V120	<input type="text"/>	121
encouraging team members to communicate their requests	1	2	3	4	V121	<input type="text"/>	122
learning to adapt performance strategies quickly as a result of changing demands	1	2	3	4	V122	<input type="text"/>	123
learning to adapt performance strategies appropriately to changing task demands	1	2	3	4	V123	<input type="text"/>	124



Please use the following code to answer this question

- 1 – Always
- 2 – Frequently
- 3 - Rarely
- 4 - Never

Continuation training characteristics *(continued)*

To what extent does air traffic control continuation training at this centre, **excluding operational training**, focus on (respond to all the options provided):

knowledge of tasks performed by all air traffic control positions at this centre	1	2	3	4	V124	<input type="text"/>	125
team situation awareness skills	1	2	3	4	V125	<input type="text"/>	126
stress coping strategies	1	2	3	4	V126	<input type="text"/>	127
getting to know my team members at a personal level	1	2	3	4	V127	<input type="text"/>	128
coordination activities and processes	1	2	3	4	V128	<input type="text"/>	129
fostering mutual trust	1	2	3	4	V129	<input type="text"/>	130
creating team cohesion	1	2	3	4	V130	<input type="text"/>	131

Question 21

Please use the following code to answer this question

- 1 – Always
- 2 – Frequently
- 3 - Rarely
- 4 - Never

Workplace learning environment

To what extent is the air traffic control workplace learning environment at this centre characterised by (respond to all the options provided):

weekly planned learning sessions	1	2	3	4	V131	<input type="text"/>	132
team members that ensure that learning does take place within the team	1	2	3	4	V132	<input type="text"/>	133
the use of learning contracts/agreements	1	2	3	4	V133	<input type="text"/>	134
planned continuation training events	1	2	3	4	V134	<input type="text"/>	135
ad hoc lectures/presentations	1	2	3	4	V135	<input type="text"/>	136
social gatherings where work related matters are discussed in an informal manner	1	2	3	4	V136	<input type="text"/>	137
social gatherings where work related matters are discussed in a formal manner	1	2	3	4	V137	<input type="text"/>	138
support from management to encourage team members to learn from workplace experiences	1	2	3	4	V138	<input type="text"/>	139

Please use the following code to answer this question

- 1 – Always
- 2 – Frequently
- 3 - Rarely
- 4 - Never

Workplace learning environment *(continued)*

To what extent is the air traffic control workplace learning environment at this centre characterised by (respond to all the options provided):

adequate resources to facilitate learning	1	2	3	4	V139	<input type="text"/>	140
an open forum that encourages discussion and sharing of experiences amongst team members	1	2	3	4	V140	<input type="text"/>	141
team members that will plan their own learning when the need arises	1	2	3	4	V141	<input type="text"/>	142

Question 22

Please use the following code to answer this question

- 1 – Always
- 2 – Frequently
- 3 - Rarely
- 4 - Never

Team learning facilitation

How often is air traffic control team learning at this centre facilitated by (respond to all the options provided):

a supportive team learning atmosphere	1	2	3	4	V142	<input type="text"/>	143
known team roles and responsibilities	1	2	3	4	V143	<input type="text"/>	144
a sensitivity towards personality differences	1	2	3	4	V144	<input type="text"/>	145
a shared motivation to learn	1	2	3	4	V145	<input type="text"/>	146
pre-planning for learning	1	2	3	4	V146	<input type="text"/>	147
guiding leadership support	1	2	3	4	V147	<input type="text"/>	148
adequate resource availability	1	2	3	4	V148	<input type="text"/>	149
participation from experienced team members	1	2	3	4	V149	<input type="text"/>	150



Appendix F Learning Approaches Questionnaire (LAQ)¹

¹ LAQ inclusion authorised by the LAQ author (reference: Appendix H).

LEARNING APPROACHES QUESTIONNAIRE (LAQ)

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Instructions:

At this SA Air Force Air Traffic Control Centre, there are opportunities to learn something almost every day - this means the **learning opportunities** you have in formal or informal learning situations (i.e. courses you attend, when studying information, material you read, in discussions and other learning experiences you have). This questionnaire examines your approach to the task of learning, in other words, the way you go about it to learn something and your relationship with other people in learning situations. The main concern here is on how you approach what you have to learn, and why you use a specific approach. Use the scale from 1 to 7 to indicate to what extent the approach indicated by the question is applicable to you. A scale of **1** means that you do **not** use the approach **at all**. A value of **7** means that you use the approach **to a very large extent**. If the values 1 to 7 are not applicable, choose any value between 1 and 7 which is applicable, depending on the extent to which you use the approach. The descriptions at the sides of the scale serve as guideline for the values you can choose. Indicate your choice by **circling** the most applicable **shaded** value on this answer sheet.

Not at all	1	2	3	4	5	6	7	To a very large extent
------------	---	---	---	---	---	---	---	------------------------

Example:

In the learning opportunities you have at **this SA Air Force Air Traffic Control Centre**, to what extent...

01 do you share your ideas with other people?

Not at all	1	②	3	4	5	6	7	To a very large extent
------------	---	---	---	---	---	---	---	------------------------

If you make a **mistake**, simply **blacken** in the box where the error is and then circle the appropriate shaded number in the alternate box. For example:

01 do you share your ideas with other people?

Not at all	1	②	3	4	5		7	To a very large extent
------------	---	---	---	---	---	--	---	------------------------

Do not skip any questions. Make sure that you circle your answer on this answer sheet. Remember there are no right or wrong answers because everyone has the right to his own views. To be able to get the most out of the results you will have to be as truthful to yourself as possible when answering the questionnaire. Do not ponder too long over a question. Preferably mark the first answer that comes to your mind. **Remember to answer as honestly as possible what is true of you.** Do not merely mark what seems to be in general a more acceptable way of responding to impress other people.

Please begin

LEARNING APPROACHES QUESTIONNAIRE (LAQ)

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Respondent number

V1 1

This section is about **your approach to learning tasks**

In the learning opportunities at this SA Air Traffic Control Centre, to what extent ...

01 do you see a learning opportunity primarily as a way of ensuring a safe and rewarding job and not as something to be enjoyed?

Not at all	1	2	3	4	5	6	7	To a very large extent
------------	---	---	---	---	---	---	---	------------------------

V2 3

02 is it important to you to prove your abilities to friends and colleagues by doing very well in a learning situation?

Not at all	1	2	3	4	5	6	7	To a very large extent
------------	---	---	---	---	---	---	---	------------------------

V3 4

03 do you find learning opportunities where you are introduced to new information as exciting as your favourite hobby?

Not at all	1	2	3	4	5	6	7	To a very large extent
------------	---	---	---	---	---	---	---	------------------------

V4 5

04 do you try to remember as much information as accurately as possible, rather than to try to understand the information?

Not at all	1	2	3	4	5	6	7	To a very large extent
------------	---	---	---	---	---	---	---	------------------------

V5 6

05 do you prioritise work in order to achieve your learning objectives?

Not at all	1	2	3	4	5	6	7	To a very large extent
------------	---	---	---	---	---	---	---	------------------------

V6 7

06 when you are reading something, do you try to think of anything similar that you have experienced?

Not at all	1	2	3	4	5	6	7	To a very large extent
------------	---	---	---	---	---	---	---	------------------------

V7 8

07 are you sure that you will be able to understand difficult topics?

Not at all	1	2	3	4	5	6	7	To a very large extent
------------	---	---	---	---	---	---	---	------------------------

V8 9

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In the learning opportunities at this SA Air Traffic Control Centre, to what extent ...

08 do you become tense because of a fear of failure when you have to learn something?

Not at all	1	2	3	4	5	6	7	To a very large extent
------------	---	---	---	---	---	---	---	------------------------

V9 10

09 are you driven by your need for success, even if it means having less time to socialise?

Not at all	1	2	3	4	5	6	7	To a very large extent
------------	---	---	---	---	---	---	---	------------------------

V10 11

10 do you find personal satisfaction in searching for new meanings in existing knowledge?

Not at all	1	2	3	4	5	6	7	To a very large extent
------------	---	---	---	---	---	---	---	------------------------

V11 12

11 do you tend to stick to memorising factual information without searching for meaning?

Not at all	1	2	3	4	5	6	7	To a very large extent
------------	---	---	---	---	---	---	---	------------------------

V12 13

12 do you ensure that you do all the required learning in time?

Not at all	1	2	3	4	5	6	7	To a very large extent
------------	---	---	---	---	---	---	---	------------------------

V13 14

13 do you tend to test new ideas by trying to imagine situations in which you will find them?

Not at all	1	2	3	4	5	6	7	To a very large extent
------------	---	---	---	---	---	---	---	------------------------

V14 15

14 do you try to learn for career purposes only, with as little effort and bother as possible?

Not at all	1	2	3	4	5	6	7	To a very large extent
------------	---	---	---	---	---	---	---	------------------------

V15 16

15 is it important to you to achieve an exceptional performance?

Not at all	1	2	3	4	5	6	7	To a very large extent
------------	---	---	---	---	---	---	---	------------------------

V16 17

LEARNING APPROACHES QUESTIONNAIRE (LAQ)

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In the learning opportunities at this SA Air Traffic Control Centre, to what extent ...

16 do you get personal satisfaction from studying new information to supplement your own ideas?

Not at all	1	2	3	4	5	6	7	To a very large extent
------------	---	---	---	---	---	---	---	------------------------

V17 18

17 are you confident of your ability to gain insight into something which others find difficult to understand?

Not at all	1	2	3	4	5	6	7	To a very large extent
------------	---	---	---	---	---	---	---	------------------------

V18 19

18 do you follow a set of rules or procedures, without thinking much about their purpose?

Not at all	1	2	3	4	5	6	7	To a very large extent
------------	---	---	---	---	---	---	---	------------------------

V19 20

19 do you tend to plan your learning programme long ahead of time?

Not at all	1	2	3	4	5	6	7	To a very large extent
------------	---	---	---	---	---	---	---	------------------------

V20 21

20 do you try to find links between different learning experiences?

Not at all	1	2	3	4	5	6	7	To a very large extent
------------	---	---	---	---	---	---	---	------------------------

V21 22

21 do you think it is an appealing idea to meet the minimum requirements in learning situations with as little effort as possible?

Not at all	1	2	3	4	5	6	7	To a very large extent
------------	---	---	---	---	---	---	---	------------------------

V22 23

22 do you tend to set high achievement standards for yourself?

Not at all	1	2	3	4	5	6	7	To a very large extent
------------	---	---	---	---	---	---	---	------------------------

V23 24

23 do you get personal satisfaction from studying new information?

Not at all	1	2	3	4	5	6	7	To a very large extent
------------	---	---	---	---	---	---	---	------------------------

V24 25

LEARNING APPROACHES QUESTIONNAIRE (LAQ)

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In the learning opportunities at this SA Air Traffic Control Centre, to what extent ...

24 do you tend to memorise parts of what you learn without knowing how they are linked to other parts?

Not at all	1	2	3	4	5	6	7	To a very large extent	V25	<input type="text"/>	26
------------	---	---	---	---	---	---	---	------------------------	-----	----------------------	----

25 do you ensure that every minute during learning situations is productively utilised?

Not at all	1	2	3	4	5	6	7	To a very large extent	V26	<input type="text"/>	27
------------	---	---	---	---	---	---	---	------------------------	-----	----------------------	----

26 do you try to find the underlying relations between different aspects?

Not at all	1	2	3	4	5	6	7	To a very large extent	V27	<input type="text"/>	28
------------	---	---	---	---	---	---	---	------------------------	-----	----------------------	----

27 do you tend to focus on the obvious aspects of a problem rather than on the underlying aspects?

Not at all	1	2	3	4	5	6	7	To a very large extent	V28	<input type="text"/>	29
------------	---	---	---	---	---	---	---	------------------------	-----	----------------------	----

28 do you believe in your ability to make a success of a learning opportunity?

Not at all	1	2	3	4	5	6	7	To a very large extent	V29	<input type="text"/>	30
------------	---	---	---	---	---	---	---	------------------------	-----	----------------------	----

29 do you prefer not to be exposed to learning opportunities because you find them stressful?

Not at all	1	2	3	4	5	6	7	To a very large extent	V30	<input type="text"/>	31
------------	---	---	---	---	---	---	---	------------------------	-----	----------------------	----

30 do you concentrate on always performing well, even if other people think that you are slightly losing your sense of balance in life?

Not at all	1	2	3	4	5	6	7	To a very large extent	V31	<input type="text"/>	32
------------	---	---	---	---	---	---	---	------------------------	-----	----------------------	----

31 do you seek satisfaction by discovering a new way of understanding existing knowledge even if it requires much effort and insight?

Not at all	1	2	3	4	5	6	7	To a very large extent	V32	<input type="text"/>	33
------------	---	---	---	---	---	---	---	------------------------	-----	----------------------	----

LEARNING APPROACHES QUESTIONNAIRE (LAQ)

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In the learning opportunities at this SA Air Traffic Control Centre, to what extent ...

32 do you tend to learn something off by heart by repeating the material until you can reproduce it?

Not at all	1	2	3	4	5	6	7	To a very large extent
------------	---	---	---	---	---	---	---	------------------------

V33 34

33 do you try to use every available minute of the day to achieve your learning objectives?

Not at all	1	2	3	4	5	6	7	To a very large extent
------------	---	---	---	---	---	---	---	------------------------

V34 35

34 do you try to relate what you learn to your own experiences?

Not at all	1	2	3	4	5	6	7	To a very large extent
------------	---	---	---	---	---	---	---	------------------------

V35 36

35 are you confident of your ability to understand the most important parts of what you have to learn?

Not at all	1	2	3	4	5	6	7	To a very large extent
------------	---	---	---	---	---	---	---	------------------------

V36 37

36 do you feel satisfied and relieved when you have at least met the minimum requirements in terms of what you should have learnt?

Not at all	1	2	3	4	5	6	7	To a very large extent
------------	---	---	---	---	---	---	---	------------------------

V37 38

37 do you try always to perform well in a learning task, even if you do not enjoy it?

Not at all	1	2	3	4	5	6	7	To a very large extent
------------	---	---	---	---	---	---	---	------------------------

V38 39

38 are learning opportunities important because they offer you an opportunity to see things from a different point of view?

Not at all	1	2	3	4	5	6	7	To a very large extent
------------	---	---	---	---	---	---	---	------------------------

V39 40

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In the learning opportunities at this SA Air Traffic Control Centre, to what extent ...

39 do you focus on simple facts instead of trying to understand complex issues?

Not at all	1	2	3	4	5	6	7	To a very large extent
------------	---	---	---	---	---	---	---	------------------------

V40 41

40 do you like to set up a time schedule for the completion of your learning tasks?

Not at all	1	2	3	4	5	6	7	To a very large extent
------------	---	---	---	---	---	---	---	------------------------

V41 42

41 do you tend to develop a framework to see how certain ideas are related to each other?

Not at all	1	2	3	4	5	6	7	To a very large extent
------------	---	---	---	---	---	---	---	------------------------

V42 43

42 is your concentration in learning situations negatively affected because you are afraid of performing poorly?

Not at all	1	2	3	4	5	6	7	To a very large extent
------------	---	---	---	---	---	---	---	------------------------

V43 44

43 is the discovery of new perspectives according to which you can live your life, your main aim during a learning opportunity?

Not at all	1	2	3	4	5	6	7	To a very large extent
------------	---	---	---	---	---	---	---	------------------------

V44 45

44 do you use learning opportunities more for financial gain than for the value of learning the content itself?

Not at all	1	2	3	4	5	6	7	To a very large extent
------------	---	---	---	---	---	---	---	------------------------

V45 46

45 do you try to determine if what you learn can be applied to various kinds of situations?

Not at all	1	2	3	4	5	6	7	To a very large extent
------------	---	---	---	---	---	---	---	------------------------

V46 47

LEARNING APPROACHES QUESTIONNAIRE (LAQ)

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In the learning opportunities at this SA Air Traffic Control Centre, to what extent ...

46 are you confident of your ability to complete learning tasks successfully?

Not at all	1	2	3	4	5	6	7	To a very large extent	V47	<input type="text"/>	48
------------	---	---	---	---	---	---	---	------------------------	-----	----------------------	----

47 do you tend to prepare for a learning opportunity long beforehand?

Not at all	1	2	3	4	5	6	7	To a very large extent	V48	<input type="text"/>	49
------------	---	---	---	---	---	---	---	------------------------	-----	----------------------	----

48 does the pressure of a learning situation make you feel tense and depressed?

Not at all	1	2	3	4	5	6	7	To a very large extent	V49	<input type="text"/>	50
------------	---	---	---	---	---	---	---	------------------------	-----	----------------------	----

49 do you try to understand ideas better by relating them to actual situations in everyday life?

Not at all	1	2	3	4	5	6	7	To a very large extent	V50	<input type="text"/>	51
------------	---	---	---	---	---	---	---	------------------------	-----	----------------------	----

50 do you try to improve on previous achievements?

Not at all	1	2	3	4	5	6	7	To a very large extent	V51	<input type="text"/>	52
------------	---	---	---	---	---	---	---	------------------------	-----	----------------------	----

51 do you tend to learn something by memorising the exact presentation used step-by-step?

Not at all	1	2	3	4	5	6	7	To a very large extent	V52	<input type="text"/>	53
------------	---	---	---	---	---	---	---	------------------------	-----	----------------------	----

52 do you seek personal satisfaction in discovering new insights?

Not at all	1	2	3	4	5	6	7	To a very large extent	V53	<input type="text"/>	54
------------	---	---	---	---	---	---	---	------------------------	-----	----------------------	----

53 do you try to get away with a minimum effort in performing a learning task as long as you don't fail?

Not at all	1	2	3	4	5	6	7	To a very large extent	V54	<input type="text"/>	55
------------	---	---	---	---	---	---	---	------------------------	-----	----------------------	----

LEARNING APPROACHES QUESTIONNAIRE (LAQ)

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In the learning opportunities at this SA Air Traffic Control Centre, to what extent ...

54 when you take your abilities and circumstances into consideration, do you think that you will be successful in a learning situation?

Not at all	1	2	3	4	5	6	7	To a very large extent	V55	<input type="text"/>	56
------------	---	---	---	---	---	---	---	------------------------	-----	----------------------	----

55 do you concentrate on optimally utilising every possible learning opportunity?

Not at all	1	2	3	4	5	6	7	To a very large extent	V56	<input type="text"/>	57
------------	---	---	---	---	---	---	---	------------------------	-----	----------------------	----

56 do you become panicky and anxious when you have given a wrong answer to a question in a learning situation?

Not at all	1	2	3	4	5	6	7	To a very large extent	V57	<input type="text"/>	58
------------	---	---	---	---	---	---	---	------------------------	-----	----------------------	----

57 do you try to relate ideas about a topic under discussion to other topics?

Not at all	1	2	3	4	5	6	7	To a very large extent	V58	<input type="text"/>	59
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58 do you regard yourself as an ambitious person, in the sense that you always want to perform exceptionally well as a learner?

Not at all	1	2	3	4	5	6	7	To a very large extent	V59	<input type="text"/>	60
------------	---	---	---	---	---	---	---	------------------------	-----	----------------------	----

59 do you concentrate on remembering as much information as possible instead of trying to understand how everything fits together?

Not at all	1	2	3	4	5	6	7	To a very large extent	V60	<input type="text"/>	61
------------	---	---	---	---	---	---	---	------------------------	-----	----------------------	----

60 do you use your free time to learn?

Not at all	1	2	3	4	5	6	7	To a very large extent	V61	<input type="text"/>	62
------------	---	---	---	---	---	---	---	------------------------	-----	----------------------	----

61 do you try to decide whether there is sufficient evidence to support another person's conclusions?

Not at all	1	2	3	4	5	6	7	To a very large extent	V62	<input type="text"/>	63
------------	---	---	---	---	---	---	---	------------------------	-----	----------------------	----

LEARNING APPROACHES QUESTIONNAIRE (LAQ)

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The following section is about **your relationship with other people in learning situations**

In the learning opportunities at this SA Air Traffic Control Centre, to what extent ...

62 are you willing to work with other people when searching for solutions to problems?

Not at all	1	2	3	4	5	6	7	To a very large extent	V63	<input type="text"/>	64
------------	---	---	---	---	---	---	---	------------------------	-----	----------------------	----

63 do you experience negative feelings if you are not pointed out as one of the best candidates in a course?

Not at all	1	2	3	4	5	6	7	To a very large extent	V64	<input type="text"/>	65
------------	---	---	---	---	---	---	---	------------------------	-----	----------------------	----

64 are you inclined to follow other people's ways of doing things?

Not at all	1	2	3	4	5	6	7	To a very large extent	V65	<input type="text"/>	66
------------	---	---	---	---	---	---	---	------------------------	-----	----------------------	----

65 do you like to decide for yourself which learning opportunities to utilise?

Not at all	1	2	3	4	5	6	7	To a very large extent	V66	<input type="text"/>	67
------------	---	---	---	---	---	---	---	------------------------	-----	----------------------	----

66 do you test your understanding of something by discussing it with other people?

Not at all	1	2	3	4	5	6	7	To a very large extent	V67	<input type="text"/>	68
------------	---	---	---	---	---	---	---	------------------------	-----	----------------------	----

67 is it important to you to answer questions better than other people do?

Not at all	1	2	3	4	5	6	7	To a very large extent	V68	<input type="text"/>	69
------------	---	---	---	---	---	---	---	------------------------	-----	----------------------	----

68 do you stick only to existing and well-known ideas and procedures?

Not at all	1	2	3	4	5	6	7	To a very large extent	V69	<input type="text"/>	70
------------	---	---	---	---	---	---	---	------------------------	-----	----------------------	----

69 do you take control over your own learning programme without the help of other people?

Not at all	1	2	3	4	5	6	7	To a very large extent	V70	<input type="text"/>	71
------------	---	---	---	---	---	---	---	------------------------	-----	----------------------	----

LEARNING APPROACHES QUESTIONNAIRE (LAQ)

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In the learning opportunities at this SA Air Traffic Control Centre, to what extent ...

70 do you share your knowledge with other people during a learning session?

Not at all	1	2	3	4	5	6	7	To a very large extent	V71	<input type="text"/>	72
------------	---	---	---	---	---	---	---	------------------------	-----	----------------------	----

71 is it important to you to compare your achievements with those of other people?

Not at all	1	2	3	4	5	6	7	To a very large extent	V72	<input type="text"/>	73
------------	---	---	---	---	---	---	---	------------------------	-----	----------------------	----

72 do you prefer to accept an expert's view of something without thinking much about it yourself?

Not at all	1	2	3	4	5	6	7	To a very large extent	V73	<input type="text"/>	74
------------	---	---	---	---	---	---	---	------------------------	-----	----------------------	----

73 would you confidently interpret something differently from most other people?

Not at all	1	2	3	4	5	6	7	To a very large extent	V74	<input type="text"/>	75
------------	---	---	---	---	---	---	---	------------------------	-----	----------------------	----

74 do you provide support and encouragement to others in a learning situation?

Not at all	1	2	3	4	5	6	7	To a very large extent	V75	<input type="text"/>	76
------------	---	---	---	---	---	---	---	------------------------	-----	----------------------	----

75 is it important to you to have better ideas than other people?

Not at all	1	2	3	4	5	6	7	To a very large extent	V76	<input type="text"/>	77
------------	---	---	---	---	---	---	---	------------------------	-----	----------------------	----

76 do you prefer that others create learning experiences for you rather than having to create them yourself?

Not at all	1	2	3	4	5	6	7	To a very large extent	V77	<input type="text"/>	78
------------	---	---	---	---	---	---	---	------------------------	-----	----------------------	----

77 do you act according to your own convictions?

Not at all	1	2	3	4	5	6	7	To a very large extent	V78	<input type="text"/>	79
------------	---	---	---	---	---	---	---	------------------------	-----	----------------------	----

LEARNING APPROACHES QUESTIONNAIRE (LAQ)

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In the learning opportunities at this SA Air Traffic Control Centre, to what extent ...

78 are personal contact and discussions with others during a learning opportunity important to you?

Not at all	1	2	3	4	5	6	7	To a very large extent
------------	---	---	---	---	---	---	---	------------------------

V79 80

79 do you rely on other people's instructions, down to the faintest details, as to what you should learn and not learn?

Not at all	1	2	3	4	5	6	7	To a very large extent
------------	---	---	---	---	---	---	---	------------------------

V80 81

80 do you stick to your own ideas, irrespective of other people's acceptance or rejection of your ideas?

Not at all	1	2	3	4	5	6	7	To a very large extent
------------	---	---	---	---	---	---	---	------------------------

V81 82

81 are you willing to exchange information with others during a learning session?

Not at all	1	2	3	4	5	6	7	To a very large extent
------------	---	---	---	---	---	---	---	------------------------

V82 83

82 is it important to you to be the best achiever on a course?

Not at all	1	2	3	4	5	6	7	To a very large extent
------------	---	---	---	---	---	---	---	------------------------

V83 84

83 do you readily do your own thing without the input of other people during learning opportunities?

Not at all	1	2	3	4	5	6	7	To a very large extent
------------	---	---	---	---	---	---	---	------------------------

V84 85

84 are you willing, with others in a group, to learn together about new things?

Not at all	1	2	3	4	5	6	7	To a very large extent
------------	---	---	---	---	---	---	---	------------------------

V85 86

85 do you prefer someone else to take the lead when difficult problems have to be dealt with?

Not at all	1	2	3	4	5	6	7	To a very large extent
------------	---	---	---	---	---	---	---	------------------------

V86 87

LEARNING APPROACHES QUESTIONNAIRE (LAQ)

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In the learning opportunities at this SA Air Traffic Control Centre, to what extent ...

86 are you at ease with the fact that your ideas might be different from other people's ideas?

Not at all	1	2	3	4	5	6	7	To a very large extent
------------	---	---	---	---	---	---	---	------------------------

V87 88

87 is it more important to you to be an achiever in what you do than just to enjoy doing it?

Not at all	1	2	3	4	5	6	7	To a very large extent
------------	---	---	---	---	---	---	---	------------------------

V88 89

88 do you openly discuss your experiences with other people so that every one can learn from these experiences?

Not at all	1	2	3	4	5	6	7	To a very large extent
------------	---	---	---	---	---	---	---	------------------------

V89 90

89 do you prefer to be told exactly how a learning assignment should be done?

Not at all	1	2	3	4	5	6	7	To a very large extent
------------	---	---	---	---	---	---	---	------------------------

V90 91

90 are you at ease with the idea of making your point of view known, even if it proves to be unpopular?

Not at all	1	2	3	4	5	6	7	To a very large extent
------------	---	---	---	---	---	---	---	------------------------

V91 92

91 do you agree that it is always important to be the best?

Not at all	1	2	3	4	5	6	7	To a very large extent
------------	---	---	---	---	---	---	---	------------------------

V92 93

92 do you inform other members of the group during a group discussion that you appreciate their contributions?

Not at all	1	2	3	4	5	6	7	To a very large extent
------------	---	---	---	---	---	---	---	------------------------

V93 94

LEARNING APPROACHES QUESTIONNAIRE (LAQ)

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In the learning opportunities at this SA Air Traffic Control Centre, to what extent ...

93 do you learn only that which other people expect of you to learn and nothing more?

Not at all	1	2	3	4	5	6	7	To a very large extent	V94	<input type="text"/>	95
------------	---	---	---	---	---	---	---	------------------------	-----	----------------------	----

94 will other people hear from you if you do not agree with their ideas?

Not at all	1	2	3	4	5	6	7	To a very large extent	V95	<input type="text"/>	96
------------	---	---	---	---	---	---	---	------------------------	-----	----------------------	----

95 do you encourage other people to take part in an exchange of ideas?

Not at all	1	2	3	4	5	6	7	To a very large extent	V96	<input type="text"/>	97
------------	---	---	---	---	---	---	---	------------------------	-----	----------------------	----

96 do you follow your own ideas even if others do not agree with you?

Not at all	1	2	3	4	5	6	7	To a very large extent	V97	<input type="text"/>	98
------------	---	---	---	---	---	---	---	------------------------	-----	----------------------	----

PLEASE ENSURE THAT YOU HAVE ANSWERED ALL THE QUESTIONS.

THANK YOU FOR COMPLETING THIS QUESTIONNAIRE



**Appendix G All Spearman correlation coefficients between LAQc and SDPM
and SDLM; and LAQs and SDPM and SDLM (only considering LAQ S-variables)
for teams 1, 2 and 3**

All Spearman correlation coefficients between LAQc and SDPM and SDLM; and LAQs and SDPM and SDLM (only considering LAQ S-variables) for teams 1, 2 and 3

LAQ (S-variables)	LAQ description	Team 1		Team 2		Team 3	
		SDPM	SDLM	SDPM	SDLM	SDPM	SDLM
SDS	Strategy (DS) – deep approach	r = 0.26	r = 0.24	r = 0.43	r = 0.77	r = 0.26	r = 0.56
SDM	Motive (DM) – deep approach	r = 0.13	r = 0.16	r = -0.02	r = 0.87	r = 0.74	r = 0.50
SDA	SDA Deep approach (DA)	r = 0.31	r = 0.31	r = 0.19	r = 0.78	r = 0.69	r = 0.81
SAS	Strategy (AS) – achievement approach	r = 0.26	r = 0.36	r = 0.35	r = 0.35	r = -0.18	r = -0.31
SAM	Motive (AM) – achievement approach	r = -0.02	r = 0.30	r = 0.26	r = 0.37	r = 0.45	r = 0.72
SAA	Achievement approach (AA)	r = 0.18	r = 0.40	r = 0.30	r = 0.40	r = 0.24	r = 0.37
SSE	Self-efficacy (SE)	r = 0.54	r = 0.32	r = -0.19	r = 0.94	r = 0.35	r = 0.42
SSS	Strategy (SS) – surface approach	r = -0.41	r = -0.52	r = -0.07	r = -0.40	r = 0.46	r = 0.45
SSM	Motive (SM) – surface approach	r = -0.03	r = -0.51	r = -0.18	r = -0.72	r = 0.48	r = 0.10
SFF	Fear of failure (FF) – surface approach	r = -0.35	r = -0.31	r = -0.22	r = -0.09	r = -0.91	r = -0.68
SSA	Surface approach (SA)	r = -0.43	r = -0.53	r = -0.30	r = -0.48	r = 0.14	r = 0.11
SDAAASE	Deep-achieving approach to learning	r = 0.21	r = 0.31	r = 0.02	r = 0.81	r = 0.45	r = 0.58
SDEPEN	Dependent (DEPEN)	r = 0.36	r = -0.18	r = -0.12	r = -0.34	r = -0.03	r = -0.27
SINDEPEN	Independent (INDEPEN)	r = 0.56	r = 0.31	r = -0.22	r = -0.27	r = 0.83	r = 0.76
SCOMP	Competitive (COMP)	r = -0.33	r = -0.17	r = -0.32	r = -0.30	r = 0.26	r = 0.45
SCOOP	Cooperative (COOP)	r = 0.96	r = 0.74	r = 0.11	r = 0.90	r = 0.29	r = 0.67



**Appendix H Verification of LAQ statistical analysis and results by the author
of the LAQ**



From: Prof. P. Schaap
University of Pretoria

To: Mr. C.G. Joubert
Student: University of Pretoria

Date: 21 September 2006

Use of the Learning Approaches Questionnaire (LAQ)

I, Prof. P. Schaap, author of the Learning Approaches Questionnaire (LAQ) hereby confirm that formal approval was granted to Mr. C.G. Joubert (student number: 24218783) in response to his request to use this questionnaire for research purposes.

I furthermore approve that a re-formatted version of this questionnaire may be included in Mr. C.G. Joubert's PhD theses titled: *Tracing the impact of self-directed team learning within an air traffic control environment*.

I, Prof. P. Schaap acknowledge that I did review the analysis and reporting of LAQ data as presented in this theses and approve thereof.

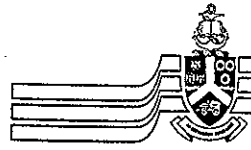
A handwritten signature in black ink that reads "PSchaap".

Prof. P. Schaap

University of Pretoria



Appendix I Ethical clearance certificate



UNIVERSITY OF PRETORIA
FACULTY OF EDUCATION
RESEARCH ETHICS COMMITTEE

CLEARANCE CERTIFICATE

CLEARANCE NUMBER : CS06/08/03

DEGREE AND PROJECT

PhD Curriculum Studies
Tracing the impact of self-directed team learning in an air traffic control environment

INVESTIGATOR(S)

Mnr C G Joubert

DEPARTMENT

Curriculum Studies

DATE CONSIDERED

30 September 2004

DECISION OF THE COMMITTEE

APPROVED

This ethical clearance is valid for 3 years from the date of consideration and may be renewed upon application

CHAIRPERSON OF ETHICS COMMITTEE

Dr S Human-Vogel

DATE

18 August 2006

CC

Prof J G Maree
Prof W J Fraser
Me J Beukes

This ethical clearance certificate is issued subject to the following conditions:

- 1 A signed personal declaration of responsibility
- 2 If the research question changes significantly so as to alter the nature of the study, a new application for ethical clearance must be submitted
- 3 It remains the students' responsibility to ensure that all the necessary forms for informed consent are kept for future queries.

Please quote the clearance number in all enquiries.



Appendix J Declaration by external coder



DECLARATION

I, Cecilia Jacomina Louw, identity number 591006 0060 089, hereby declare that I acted in the capacity of external codifier for Mr Christiaan Gerhardus Joubert in the data analysis phase of his thesis.

In making the analysis, possible categories and subcategories were identified and based on scientific principles. Furthermore, tendencies in die data were presented as accurately as possible and based on qualitative analysis principles.

THUS SIGNED at Centurion on this 6 day of
October 2006.

A handwritten signature in black ink, appearing to be 'C. Louw', written over a dotted line.



Appendix K Approval received from the South African Air Force



Directorate Command and Control Systems



Air Command Private Bag X199, Pretoria 0001 / Air Command, South African Air Force Headquarters, Deqaar Road, Pretoria, 0002

Telephone: (012) 312 2257
 Facsimile: (012) 312 2076
 Signal: AIR COMD 343A
 Enquiries: Col E. Zimmer

Air Command
 Directorate Command &
 Control Systems
 Private Bag X199
 Pretoria

18 February 2005

Mr Ian Joubert,

REQUEST FOR RESEARCH WITHIN THE SA AIR FORCE

1. Conversation dated 16 February 2005 refers.
2. DC&CS, Brig Gen L. Lombard and SSO ATM, Col T. Jacobs have in concept approved your request to conduct research within the SA Air Force (Air Traffic Management Environment). The following actions need to be communicated and documented:
 - a. Myself, to ensure the necessary authorities and liaison for yourself to in person, at the specific Control Towers conduct your research. This I will confirm.
 - b. Yourself, to forward to my office your **detailed** plan of action/activities to meet your requirements. This must include for example dates, places and specific requirements.
3. With all the above in place, a meeting with Brig Gen Lombard will be arranged to update himself on the way forward. On conclusion of your research, Brig Gen Lombard, Col Jacobs and myself will need to have visibility into your final product.
4. I look forward to be off assistance as well as to what benefit the result of your research could be to SAAF ATC.

(E. ZIMMER)
 SSO HR FUNCTIONAL DEVELOPMENT AND CAREER MANAGEMENT: COL

ez/ez





Appendix L Extracts of interviews conducted



Extracts from individual interviews

Respondent number	Questions posed and responses recorded
06	<p data-bbox="555 485 1883 517">Explain with the aid of examples how teamwork influences the outcome of the air traffic control service provided by your centre?</p> <p data-bbox="477 584 1962 1158"><i>Teamwork in the ATC environment is very important. A simple thing like animals which is especially a problem at our ATC centre on and around the runway poses a great threat. With more eyes looking around for and seeing animals crossing or near the runway while you are busy you may have missed as well as vultures and other birds that is already great proof of how teamwork can change the outcome of things. The same with the coordination between approach, ground and tower and how they influence each other in the actual flow of air traffic as it may be. It has a great influence on the outcome of the whole, call it, flying safety as well as the actual flow of air traffic et cetera. Around here, especially lately with all the (aircraft type) being here that has really come to the point where it makes a big difference; there is not a thing of dumping aircraft on the aerodrome controller and yours that cannot take place. Plain and simple - the better the coordination and the better the teamwork the better the flow of air traffic; especially with a lot of student pilots being here at the moment and you have got (approach types), in between IF patterns, in between normal circuit training and you have got to fit everyone in (example stated). Coordination and the whole team effort makes it a much safer environment and much easier to really keep the traffic flowing without impending on a student's learning ability or his chance of learning because of ... (controlling action) because of a lack of coordination or a lack of team effort then actually you are taking the chance of learning away from that student – it is very important!</i></p>



08	<p>Explain with the aid of examples how learning from air traffic control teamwork experiences influences your own performance?</p> <p><i>It happens constantly in the tower. Everybody experiences something different or out of the ordinary. When they come up to the tower everybody is taught about it and they always share the experience with everybody – so you know basically what they experienced. And you will remember it and next time when you work and you have perhaps the same situation or the same person and he is giving you trouble just because he can – because that happens as well – then you know, oh well, its this situation and what is the options available. Discussions about incidents is quite frequent in the tower. How to handle them, different options for different types of situations happens quite frequently. It just starts, ... as a casual conversation between two people – “I had this situation” – and they start talking and telling what happened and then one or two other people start join in and eventually everybody is talking and giving options, discussing the situation and giving alternatives, asking questions; maybe it wont be relevant but it leads from the situation.</i></p> <p><i>Learning differs from people, I know some of the people will, from my experience, go and write it down; we have a controller like that in the tower, and use it for his next period. Me, personally I just file it somewhere in my head and next time I’m confronted with a situation you remember that one thing that you were taught in the tower and you try and see if it is applicable, is it something that changed?, how can I solve this problem?, is that information relevant or not? It is definitely helpful – without it I don’t think our service would be as professional as it is.</i></p> <p><i>Interest in the way that we deliver a service and also interest in you as a person helps you achieve the best that you can be. You need to ensure that the service that you as part of the team provide is at the same level as the rest of the team.</i></p>
15	<p>Explain with the aid of examples how learning from experience influences air traffic control teamwork?</p> <p><i>Yes, I believe there is an interesting saying that experience is a very hard teacher, it first gives you the test and then the lesson. Experience is something that you cannot disregard it. As stated earlier, when there is certain situations we feel that we could have done better ... we then sit</i></p>



	<p>around, sit upstairs and we discuss what can we do. We are not, we do not try to hide our mistakes, we discuss it with each other. If I feel I've made a mistake or there is a certain situation that I could have done better with, I sound-board it to the rest of the members to ask them "how would you manage that situation?" So, by picking up experience not only by myself I explain it to the rest of the members and vice versa. Other members even the seniors and the juniors they usually come and ask for, ... not advice, but "what would you do in a situation like that?" So, yes, it's a very integral part of teamwork to improve the service. So the experience one picks up is not to be kept for yourself. We do share situations with each other and that is how we learn. Then other members pick up the experience that you pick up and then the teamwork reaches consensus about certain things to be done to improve the service of the team.</p> <p>I think at this stage ... I cannot speak for the rest of the tower's team or (organization) we must, not improve, we must endeavour to have more teamwork sessions, be it formally or informally to ensure that this team is running smoothly. I would not say that we are lacking but we can definitely have more sessions where we as a team can have teambuilding exercises for instance or even social events. One would not like to have individuals; ... individual participation; one would like to have at least two in a group, give them certain situations, ATC situations, or even other problematic situations where one has to think fast, react fast ... so yes, exercises in the sense of problem solving in group format.</p>
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Extracts from focus group interviews

Respondent numbers	Questions posed and responses recorded
01,02, 04 & 07	<p>What can a team member, joining the air traffic control team, expect from the team?</p> <p><i>In my opinion, somebody from outside the team can expect a lot of assistance, a lot of suggestions and a lot of help from the team. When they begin to fit in with the group given the circumstances they will be able to do the job at the end of the day (emphasizing the task focus). He</i></p>



	<p>would be drawn into the group socially, most definitely, actually. We get close to each other, we don't only work together, we also live together, so – it is easier in our context, when you arrive, you are part of the group. More than you would be at (ATSU) where you have a 9 to 5 job and you are totally anonymous after hours. I think you are immediately in the group from a social aspect as well. OK, what you should not expect, you should not expect the team to adapt around you. You should maybe then realize that the team was there before you came there. So you can't expect them now to all go out of their way to make you feel, ... OK, they will make you feel welcome, but you must work from your side as well, because you must become part of the team.</p> <p>I would like to maybe add that the team would at assess you at first and see what type of person you are and how you can contribute to the team as well. And then from there try, lets call it, ... develop you and make you part of the team. That the team, ... I find I like to see what I can learn from that person; he is coming from a different team joining my team and what we can learn from each other. It is important that they be open or willing to in what you are trying to teach them.</p> <p>I think that touches on what we have done in some of our earlier sessions, where the team will immediately also draw that person's expertise out because each person is a specialist and he doesn't necessary realize it. So, there is a mutual, ... information will be shared, knowledge will be shared; there will be a two-way street. Also another thing is that it won't be necessary all formal, maybe this is the next question. When somebody arrives here the training officer will take him and obviously you have your standard training profile that you will go through with the person; you will see very regularly the person taking that person off to the side and showing them something totally different and some of that is not even in the curriculum, necessarily. But, stuff that needs to be shown and it happens almost out of its own; not necessarily triggered by any specific piece of paper work.</p>
10, 11, 12 & 16	<p>How is individual and collective learning planned and executed at your air traffic control centre?</p> <p>Planned learning is the validation, when you get here there is a plan, you will start at zero hours and you will work through. You have to write your exams, you have to pass your exams you are under continued evaluation during validation; that's the plan. So, I think ... and your</p>



	<p><i>continuation training; as well as ... I think we have realized that every time something happens we debrief about it immediately. An incident occurs and sometimes it is not based on something that ... sometimes it is something that has gone well ... it gets put into the occurrence log and that is briefed very comprehensively in as far as possible whoever were involved and not involved ... what did we learn out of that? ... especially positive. So I think that is the planned part. It is not planned that tomorrow afternoon we are going to have an emergency and then discuss it but it is planned that whenever something happens it will be debriefed directly afterwards. It is true what he says, it is not planned, it just happens automatically. Everybody knows about it and everybody is talking about it, especially (person); he likes talking so everyone is drawn into the conversation as I said – people aren't scattered, it is a strange magnet, they are drawn upstairs. Everyone wants to see what is going on, again I think because of the group dynamics. If there were really conflict between people it would really affect this. So, it is planned unplanned. It is a known fact that this is going to happen, although there are training days when things are planned. What I also see is people who have a certain extent of knowledge about the subject ... relevant or irrelevant ... it is sort of a challenge to note something that somebody else don't know (example provided). And then they share it.</i></p> <p><i>A large percentage of ATCs become ATCs because of an inherent need to help people, they want to do something. This is a case of you want to get your knowledge to help. You actually feel good, a sense of accomplishment, by knowing something that your colleagues don't know and you can assist them because they want to know that. And you get a positive response out of that. I think that is what drives it, rather than the idea that I am better than you. I think that is the prime drive for everything. You will not find an "I've got it you must get it" attitude. If I know something or anybody in the team knows something which another guy now has to look up and search for it would be shared.</i></p>
18, 20, 23 & 24	<p>How can air traffic control team learning at your centre be improved?</p> <p><i>First of all team learning ... if the team doesn't operate well together, then the team learning part will be very difficult. I definitely think that from the towers side, but it is difficult considering the hours that we work and stuff, ... to do more social team things together ... work-related but away from work; like ... the ATMS things that we do, ... there is always three people that need to work and stay behind ... because we have to</i></p>



always accommodate the pilots. If you make it interesting, ... there is such a whole wide world out there with regards to what you can learn and what other people can learn. I think if you start to do it more on a social basis you won't have to feel like you are at school. We start getting more "vrymoedigheid" ... where the people can feel that they can ask questions ... because I know there is a lot of people that just sit back in the tower ... and I think if you also do that, they will feel more part of the team. And the questions that they ask ... you think that more than one person in the tower doesn't know it ... then she will make it part of the continuation training for instance, by asking questions related to that situation or scenario. Then people will feel more free to ask questions and do things like that.

I also think we must create a culture ... like an open door policy, where every person, even a junior must feel free to make suggestions and identify needs from bottom up to the top and top to bottom. I think by encouraging everyone in the team to ... I use the example of the internet – go to the internet aviation sites, and you will identify something that might be new to the team and identify such needs and do some research on it.