



UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

APPENDIX 1

SECTION 1



APPENDIX I: Chapter 3

1. Group interviews - copies of questions asked

2. Copies of Personal profile questionnaires
 - a. Neethling Personal Skills Instrument,
 - b. Temperament indicator - David Keirse and
 - c. Self Image Evaluation.I.

3. Signed consent letters from the student teachers



Interviews

Group discussion/interview 1 11/02

The teacher educator, (Professor Ned) used a group interview at the outset of the programme during the first week. The questions that the teacher educator asked were concerned with eliciting the students' baseline understanding of the role of a teacher. Examples of the questions were: If you want to describe your role in the Life Sciences, what would your role be as a teacher? Have you had a chance to see some of the Life Sciences teachers at work during your observation or any other experience and have you observed that the teachers are more or less teaching the theoretical work?

Group discussion/interview 2 11/03

During this interview the student teachers and the researcher were the participants. This interview was held in the first forty minutes of the planned time for the university specialisation discussion session and straight after the interview the discussion session took place. The interview was started by asking each student teacher if they felt comfortable with the tensions - the one was the video aspect (student teachers had stated previously that they did not feel comfortable about being videoed) and what some of the things were that they you would like to raise at that time. The questions asked focused on each student teacher's knowledge construction, what would be expected of them in the schools and their drawing of how they saw themselves as facilitators of learning.

Group discussion/interview 3 - 29/03

This interview was held during a planned university specialisation session and the researcher and student teachers were present. The interview took place in the first hour of the session. On this day the student teachers were at the university for the full day designing and preparing their learning tasks and activities for facilitation of learning for the first school based session. This interview was held after the student teachers had spent a week observing at the school that they were to facilitate learning in for the first school-based practicum session.



Some of the questions that I asked during the reflections at this point in time and your personal experiences? Had you planned the activities for them (the learners) or were you just doing what the teacher asked you to do? Have you used anything of what you developed here (university sessions) so far or did you just go out to observe? If you had to think about your experience at school - would you re-design it or would you change it in anyway? At this point I need to understand how you are personally interpreting what a reflection is? When in the programme did you get clarity about reflection and what you need to focus on? Are you comfortable with reflecting? What is your understanding of "phronesis" and practice theory? A - Do you see - is there a link or is there a space in the programme that you are experiencing that gives you this development of practical wisdom? Have you encountered and how have you encountered- practice theory? Do you experience the construction of practice theory at university and how do you experience it? You stated that the reflection sessions at the university that you had after school, were helpful- how were these reflections used? When you were discussing problems that you experienced at the school, what was your participation in this?

Group discussion/interview 4 - 19/04

This group interview was held on the first day that the student teachers spent at the school facilitating for their first school-based facilitation session. The group interview was held during the afternoon when the student teachers came to the university for a planned university specialisation discussion session. The student teachers and the researcher participated in the group interview.

I asked the student teachers to respond to the following questions which I presented one at a time at particular points during the interview: How are you feeling right now? What is your expectation of the contribution of the mentor teacher towards constructing your practice theory? How do you see yourself at this point in time with regard to your construction of your practice theory? Did you see the university specialisation session that you experienced during the last term (Term 1) as contributing to the construction of your practice theory and how did it contribute? What specifically helped? During the group interview I also shared the research questions with the student teachers and asked them about their feelings and their comments about the following questions:



What was your base-line understanding when you entered the programme?

What is your expectation of the contribution of specialization programme towards constructing your practice theory? How do you perceive the actual contribution of specialization programme to your practice theory? How do you use the contribution of specialization programme? What are your expectations in regard to the contribution of the mentor teacher? How do you perceive the actual contribution of mentor teacher? How do you use the contribution of the mentor teacher?

The student teachers were also asked: how do you feel about being involved in exploring the construction of your practice theory? Are you comfortable; is there anything that should be changed? If you look at the way in which this research is going, looking at participatory action research, see it as four phases: beginning of the programme; first term strong focus on specialisation, second term school-based and third term - school-based. Within each of these particular cycles what we are looking at is what was the experience of the students and how have these experiences changed?

Group discussion/interview 5 - 24/05

The teacher educator, researcher and student teachers were present during this interview. The teacher educator took on the role of the interviewer and I was a participant observer in the process. During this discussion/interview the teacher educator explored the student teachers' thinking and feelings about the assessment of the learning tasks that they were to present during the school-based practicum session.

The teacher educator started the discussion interview by stating that the purpose of this interview is to observe the videos of Mack and Bernice facilitating learning of a Life Sciences learning task. The instructions that the teacher educator put to the student teachers were: while observing the video, think and pick out the things that we need to be assessing? Before the video was played, a discussion on the issues to look for when assessing the learning task presentation ensued. The student teachers shared their ideas of what should be looked for and then a list was compiled from these inputs. The teacher



educator played the video and stoppe was required. During the discussion, assessment criteria that could be used to assess the facilitation of the learning tasks were listed and an assessment rubric was constructed.



a. Neethling Personal Skills Instrument

The Neethling Skills Instrument is a descriptive, non-judgemental assessment with no profile being superior to the other. The individual Skills Profile identifies the strengths of the skills in every quadrant. The profile report focuses the specific quadrant scores and makes recommendations based on these scores.

General information regarding the quadrants: LI skills - examples of skills are investigative, critical, questioning, reasoned, rational, logical, balanced and well-argued. Examples of jobs that usually require L 1 skills: Engineer ; L2 skills are methodical, implementation, traditional, organisational, planning, meticulous, painstaking, comprehensive, thorough, reliable, punctual, consciences; R2 skills are responsive, interpersonal, receptive, aware, people insightful, expressive, listening, approachable, sympathetic, eager, networking, coaching, teaching (especially young children), communication and RI skills are possibility finding, incorporate ideas, conceptualising, experimenting, generating ideas and solutions, integrative, idea-intuition, associate, relate ideas and experimenting.

The Individual Skills Profile indicates high, average and low preference areas. The scores can be divided into the following categories: 95+ very high preferences; 80 - 94 High preference; 65 - 79 Average preference; 50 - 64 low preference and -50 very low preferences.



An individual's profile is evaluated to exact marks. As the instrument measures skills and not preference, it is possible for an individual to have a low skills profile for a specific quadrant, yet love the functions and characteristics associated with that particular quadrant. The most common reason for this happening is that preferring ("liking") something does not automatically mean you have the skills to execute or implement the preference. A preference may have the preference for singing but does not have any singing skills.

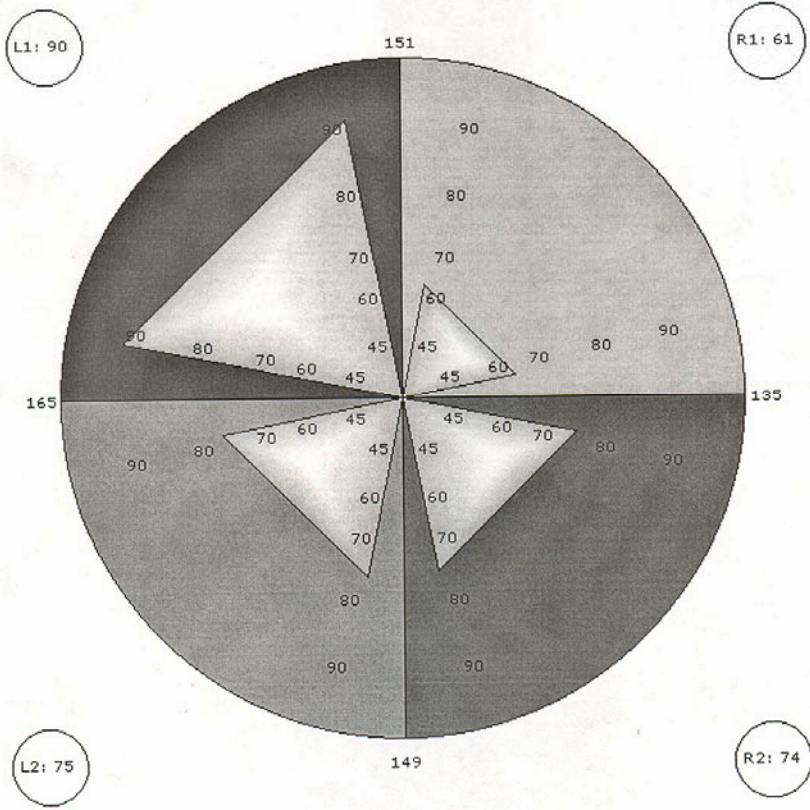
The opposite is also sometimes true. A person may have excellent skills for accounting but has little or no preference for doing the work of an accountant. It would be very difficult to sustain passion and energy, if the correlation between the preference profile and skills profile is low. As no person is completely one-quadrant dominant, the profile indicates a high, average and low preference areas. It is important to note that the total in every profile is 300. Skills can be developed and it is possible that a person's skills profile may change over time



2(a)

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Personal Skills Instrument





EXAMPLE REPORT

Interpreting the Results

The Neethling Skills Instrument is a descriptive, non-judgmental assessment with no profile being superior to the other. The individual Skills Profile identifies the strengths of the skills in every quadrant. The profile report focuses the specific quadrant scores and makes recommendations based on these scores.

It could happen that a person's skills profile differs from his/her preference profile. The most common reason for this happening is that preferring ("liking") something does not automatically mean you have the skills to execute or implement the preference. A person may have the preference for singing but does not have any singing skills.

The opposite is also sometimes true. A person may have excellent skills for accounting but has little or no preference for doing the work of an accountant. It would be very difficult to sustain passion and energy, if the correlation between the preference profile and skills profile is low.

As no person is completely one-quadrant dominant, the profile indicates high, average and low preference areas. It is important to note that the total in every profile is 300.

The scores can briefly be divided into the following categories:

- 95+ Very High preference
- 80-94 High preference
- 65-79 Average preference
- 50-64 Low preference
- 50 Very low preference

Please note that an individual's profile should always be evaluated in categories and not according to exact scores.

As this instrument measures skill and not preference, it is possible for an individual to have a low skills profile (such as 57) for a specific quadrant, yet love the functions and characteristics associated with that particular quadrant. For example a person could have a low skills profile for Quadrant L1; yet still love working with numbers, facts etc. However, in the long run, such a person would not be able to continue productively, as he/she would be doing a job for which he/she has little skills. Skills can be developed and it is possible that a person's skills profile may change over time.



EXAMPLE REPORT

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General information regarding the different quadrants

L1 – Skills

Examples of L1 skills:

Investigative, Diagnostic, Critical, Questioning, Reasoned, Rational, Logical, Balanced, Well-argued

A Few examples of jobs that usually require L1 skills:

Engineer, Actuary, Researcher, Economic sector, Surgeon, Treasurer, Bank Manager, Financial sector, Natural Sciences, Dentist

L2 – Skills

Examples of L2 skills:

Methodical, Implementation, Traditional, Organizational, Planning, Meticulous, Painstaking, Comprehensive, Thorough, Reliable, Punctual, Consciences

A few examples of jobs that usually require L2 skills:

Foreman, Finance clerks, Record keepers, Military Managers, Administration, Planners, Supervisor, Bookkeepers, Certain Engineering Professions

R2 – Skills

Examples of R2 skills:

Responsive, Interpersonal, Receptive, Aware, People insightful, Expressive, Listening, Approachable, Sympathetic, Eager, Networking, Coaching, Teaching (especially young children), Communication

A few examples of jobs that usually require R2 skills:

School Counselor, Nurse, Social worker, Teacher (especially young children), Consultant, Direct sales, Journalism

R1 – Skills

Examples of R1 skills:

Possibility finding, Incorporate ideas, Conceptualizing, Experimenting, Generating ideas and solutions, Integrative, Idea-intuition, Associate, Relate ideas, Experimenting

A few examples of jobs that usually require R1 skills:

Entrepreneur, Art director, Marketing consultant, Designer, Strategic planning, Advertising, Pediatrics, Architect

Areas of Application

- * Design your ideal job.
- * Appoint the right (skilled) person for the job.
- * Apply a multi-skilling approach within the work place.



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- * Choose high impact teams with whole brain skills.
- * Get the whole brain working for you in sport
- * Apply teaching/training skills effectively
- * Determine special skills (dealing with people, organising, etc) to enhance specialisation.
- * Discover why an individual can DO a job without having any passion for it (no alignment between preferences and skills)



EXAMPLE REPORT

Candidate specific information

■ Quadrant: L1 - 90 High Preference

A high score in the L1 quadrant indicates that you are good at digging deeper, researching and solving problems. You can stay impartial until you have gathered all the necessary information. Your skills include probing and examining problems in a critical and clinical way. You can be reasonable, realistic and make objective decisions without allowing your emotions to interfere. This also allows you to set realistic goals and to achieve the targets set. You possess the skills to work in a focused and accurate way, investigating, identifying mistakes and getting to the essence of a problem. You are probably good at working with numbers.

■ Quadrant: L2 - 75 Average Preference

An average score in the L2 quadrant indicates that, although you can be comfortable with working in a disciplined and detailed fashion, this is not your dominant skill. You will be able to follow procedures and to complete tasks timeously, but not on an ongoing basis. You may have the skill to maintain order in certain areas of your life, but probably not in all.

■ Quadrant: R2 - 74 Average Preference

An average score in the R2 quadrant indicates that you may be able to network with people, cooperate with others to complete tasks, but being a team player is not your dominant skill. You may be able to socialise and seek companionship, but not on an ongoing basis. Although you may be able to share ideas with others and show sensitivity in certain circumstances, you do not always find it comfortable to do so.

■ Quadrant: R1 - 61 Low Preference

A low score in the R1 quadrant indicates that you lack the skills to see the world through other people's eyes, to stay open-minded and to embrace change. You do not use fantasy, daydreaming and intuition effectively to help you solve problems. You do not cope well with uncertainty, contradiction and challenges to the status quo. You are unable to function in an disorderly environment



b. Temperament indicator - Dav

The Keirsey Temperament indicator is a powerful forty question personality instrument that helps individuals discover their personality type. The data from using this indicator gives people insight into themselves which is useful for choosing a career and also for self-understanding.

According to Keirsey (1998, p. 2) people may be "sorted into one of four temperament categories. A category is Popular Sanguine (extrovert) who is outgoing and people-oriented. The characteristics of A are: inspiring, influential, impressive, interesting, convincing, important to be noticed, flexible (friends all over), interested in people, imaginative, impulsive, illogical, you enjoy them, good beginners, poor finishers, lovable, exaggerating, easily cheered up. **In** control/out of control: optimistic/unrealistic; convincing/manipulative; excited/emotional; outgoing/without focus; fiery/irritable; involved/lost; imagine/dream; warm/without focus. They like: to be loved; expression of their ideas and feelings, to be part of a group, surprises, many social activities, fun and pleasure, to talk a lot, recognition and acknowledgement.

Category B is an Influential Choleric (outwardly forceful) who is outgoing and task-oriented. The characteristics of B are: dominant, dominating, exhausting, direct, determined, definite, executor, goal directed, director, dogmatic, hardworking, in a hurry, energetic, dynamic, and proud. Difficult to please, self-assured, busy, performer. **In** control/out of control: brave/reckless; quick to react/rude; visionary/impatient; results oriented/unpleasantly ambitious; consulting/dictatorial; self-assured/egocentric; direct/attacking; independent/arrogant; competing/cruel. They like: winning, planning, new ideas, results, to be their own boss, to move fast, challenges.



Category C is a Perfectionist Melancholic and task-oriented. The characteristics of C are: careful, competent, clever, careful judging, critical thinkers, wants to be accommodated, dependable, perfectionist, correct, stable, cold, wants detail and input, difficult to please, nitpicking, self-sacrificing, noisy and self-deprecating. In control/out of control: neat/compulsive; logic/critical; dedicated/unsocial; noisy/interfering; teachable/takes exception; careful/fearful; correct/rigid; questioning/doubtful. They like: to be right, to know what is expected of them, fixed procedures, clear instructions, to finish what they are busy with, planning- prior predictions, setting long term goals.

Category D is Tranquil Phlegmatic (careful) who is withholding and people-oriented. The characteristics of D are: supportive, stable, sure, servant, quite, submissive, shy, sentimental, equality, unity, can't say no, easily manipulated, loyal, poor beginners - good finishers, team workers. In control/out of control: relaxed/no initiative; trustworthy/dependent; cooperation/slave; stable/no decision; good listener/no communication; focused/unflexible; stable/resist change; good/manipulative; systematic/slow. They like acceptance; team work and cooperation, stay with what works for them, harmony, that things must remain the same, predictability, rest and peace.



TEMPERAMENTE			
Nie om te oordeel of om te Etiketeer nie maar om mense te verstaan.			

Maak 'n merkie agter elk van die volgende rye van vier woorde wat meeste van toepassing is op jou lewe, as nie een van toepassing blyk te wees op jou nie, merk in elk geval een wat miskien die meeste van toepassing kan wees op jou lewe.

STERKPUNTE / STRENGTHS

	A		B		C		D	
1	Avontuurlik Adventurous	B	Aanpasbaar Adaptable	D	Opgewek Animated	A	Ontliedend Analytical	C
2	Hardkoppig Persistent	C	Speels Playful	A	Oorredend Persuasive	B	Vreedsaam Peaceful	D
3	Onderdanig Submissive	D	Self-opofferend Self-sacrificing	C	Gesellig Sociable	A	Sterk-wil Strong-willed	B
4	Bedagsaam Considerate	C	Beheersd Controlled	D	Mededingend Competitive	B	Oortuigend Convincing	A
5	Verfrissend Refreshing	A	Beleefd Respectful	C	Terughoudend Reserved	D	Vindingryk Resourceful	B
6	Tevrede Satisfied	D	Fyngevoelig Sensitive	C	Selfstandig Self-reliant	B	Oopgeruimd Spirited	A
7	Beplanner Planner	C	Geduldig Patient	D	Positief Positive	B	Voorstander Promoter	A
8	Seker Sure	B	Spontaan Spontaneous	A	Geskeduleerd Scheduled	C	Skaam Shy	D
9	Ordelik Orderly	C	Vriendelik Friendly	D	Uitgesproke Outspoken	B	Optimisties Optimistic	A
10	Vriendelik Friendly	D	Getrou Faithful	C	Snaaks Funny	A	Dominerend Forceful	B
11	Waaghalsig Daring	B	Genotvol Delightful	A	Taktvol Diplomatic	D	Breedvoeng Detailed	C
12	Oopgeruimd Cheerful	A	Aandring Consistent	D	Beskaafd Cultured	C	Selfversekerd Confident	B
13	Idealiseer Idealistic	C	Onafhanklik Independent	B	Ergeloos Inoffensive	D	Inspirend Inspiring	A
14	Demonstreerder Demonstrative	A	Beslis Decisive	B	Droë-humor Dry-humor	D	Diep Deep	C
5	Bemiddelaar Mediator	D	Musikaal Musical	C	Beweger Mover	B	Meng maklik Mixes easily	A
16	Bedagsaam Thoughtful	C	Hardnekkig Tenacious	B	Geselsersig Talker	A	Verdraagsaam Tolerant	D
17	Luisteraar Listener	D	Getrou / lojaal Loyal	C	Leier Leader	B	Oopgeruimd Lively	A
18	Tevrede Content	D	Vernaam Chief	B	Grampmaker Chartmaker	C	Oulik Cute	A
19	Perfeksionisties Perfectionist	C	Aangenaam Pleasant	D	Produktief Productive	B	Gewild Popular	A
20	Nooit dieselfde Bouncy	A	Vrypostig Bold	B	Gemanierd Behaved	C	Gebalanseerd Balanced	D

Sterkpunte	A=	B=	C=	D=
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SWAKPUNTE / WEAKNESSES

	A		B		C		D	
21	Uitdrukkingloos Blank	D	Skaam Bashful	C	Luidrugtig Brassy	A	Baasspelerig Bossy	B
22	Ongedissiplineerd Undisciplined	A	Onsimpatiek Unsympathetic	B	Onintoesiasies Unenthusiastic	D	Onvergeefflik Unforgiving	C
23	Swygsaam Reticent	D	Bitterheid Resentful	C	Weerstandbiedend Resistant	B	Herhalend Repetitious	A
24	Puntenerig Fussy	C	Vreesagtig Fearful	D	Vergeetagtig Forgetful	A	Uitgesproke Frank	B
25	Ongeduldig Impatient	B	Onseker Insecure	C	Besluitloos Indecisive	D	Onderbreek Interrupts	A
26	Onpopulêr Unpopular	C	Onbetrokke Uninvolved	D	Onvoorspelbaar Unpredictable	A	Afsydig (koud) Unaffectionate	B
27	Eiewys Headstrong	B	Sorgeloos Haphazard	A	Moellik tevrede gestel Hard to please	C	Besluitloos Hesitant	D
28	Gewoon Plain	D	Pessimisties Pessimistic	C	Trots Proud	B	Toestemmend Permissive	A
29	Vinnig Kwaad Angered Easily	A	Doelloos Aimless	D	Twisgierig Argumentative	B	Vervreemd Alienated	C
30	Naïef Naïve	A	Negatiewe Houding Negative Attitude	C	Senuweeagtig Nervous	B	Onbetrokke Nonchalant	D
31	Bekommerde Persoon Worrier	D	Teruggetrokke Withdrawn	C	Werkolis Workaholic	B	Wil Erkenning Hê Wants Credit	A
32	Oor Sensitief Too Sensitive	C	Taktloos Tactless	B	Skaam Timid	D	Spraaksaam Talkative	A
33	Onseker Doubtful	D	Ongeorganiseerd Disorganized	A	Dominerend Domineering	B	Depressief Depressed	C
34	Wispelturig Inconsistent	A	Introvert Introvert	C	Onverdraagsaam Intolerant	B	Agterlosig Indifferent	D
35	Wanordelik Messy	A	Buierig Moody	C	Mompelaar Mumbles	D	Manipuleerder Manipulator	B
36	Traag Slow	D	Hardkoppig Stubborn	B	Pronkerig Show-off	A	Skepties Skeptical	C
37	Alleenloper Loner	C	Baasspelerig Bossy	B	Lul Lazy	D	Luidrugtig Loud	A
38	Stadig Sluggish	D	Agterdogtig Suspicious	C	Kort Humeur Short Tempered	B	Verstrooid Scatterbrained	A
39	Wraakgierig Revengeful	C	Rusteloos Restless	A	Onwillig Reluctant	D	Haastig Rash	B
40	Ooreenkoms Aangaan Compromising	D	Krities Critical	C	Handig Crafty	B	Veranderlik Changeable	A

Swakpunte	A=	B=	C=	D=
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GROOT TOTAAL:	A =	B =	C =	D =
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LEADER		
P L A Y	A POPULAR SANGUINE Extrovert (Outgoing, people-oriented)	B INFLUENTIAL CHOLERIC Outwardly forceful (Outgoing, task-oriented)
	<u>Characteristics:</u> Inspiring, influential, impressive, interesting, convincing, important to be noticed, flexible (friends all over), interested in people, imaginative, impulsive, illogical, you enjoy them, good beginners, poor finishers, lovable, exaggerating, easily cheered up.	<u>Characteristics:</u> Dominant, dominating, exhausting; direct, determined, definite, executor, coal directed, director, dogmatic, hard working, in a hurry, energetic, dynamic, proud. Difficult to please, self-assured, busy, performer.
	<u>In control / out of control:</u> Optimistic/unrealistic; convincing/manipulative; excited/emotional; outgoing/without focus; fiery/imitable; involved/lost; imagine/dream; warm/without focus	<u>In control / out of control:</u> Brave/reckless; quick to react/rude; visionary/impatient; results oriented/ unpleasantly ambitious; consulting/dictatorial; self-assured/egocentric; direct/attacking; independent/arrogant; competing/cruel
	<u>They like:</u> To be loved, expression of their ideas and feelings, to be part of a group, surprises, many social activities, fun and pleasure, to talk a lot, recognition and acknowledgement.	<u>They like:</u> Winning, planning, new ideas, results, to be their own boss, to move fast, challenges
	D TRANQUIL PHLEGMATIC Careful (Withholding, people-oriented)	C PERFECTIONISTIC MELANCHOLY Introvert (Withholding, task-oriented)
	<u>Characteristics:</u> Supportive, stable, sure, servant, quiet, submissive, shy, sentimental, equality, unity, can't say no, easily manipulated, loyal, poor beginners – good finishers, team workers	<u>Characteristics:</u> Careful, competent, clever, careful, judging, critical thinkers, wants to be accommodated, dependable, perfectionist, correct, stable, cold, wants detail and input, difficult to please, nit-picking, self-sacrificing, nosy, self-deprecating.
	<u>In control / out of control:</u> Relaxed/no initiative; trustworthy/dependent; cooperation/slave; stable/no decisions; good listener/no communication; focused/unflexible; stable/resist change; good/manipulable; systematic/slow	<u>In control / out of control:</u> Neat/compulsive; logic/critical; dedicated/unsocial; nosy/interfering; teachable/takes exception; careful/fearful; correct/rigid; questioning/doubtful
	<u>They like:</u> They like: Acceptance, team work and cooperation, stay with what works for them, harmony, that things must remain the same, predictability, rest and peace.	<u>They like:</u> To be right, to know what is expected of them, fixed procedures, clear instructions, to finish what they are busy with, planning – prior predictions, setting long term goals



c. Self Image Evaluation.

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2(c)

SELF IMAGE EVALUATION

This is not a test; therefore there is no right or wrong answer. Mark the score that correlates with your circumstances.

1 = Never, no; 2 = Seldom; 3 = Sometimes; 4 = Often; 5 = Always, Yes

1. I feel that people won't like me if they were to know me well	1	2	3	4	5
2. Other people cope much better with life than what I do	1	2	3	4	5
3. I think that I am a beautiful person	1	2	3	4	5
4. I feel that other people are happy when I am with them	1	2	3	4	5
5. I think that people really enjoy talking to me	1	2	3	4	5
6. I feel that I am a competent person	1	2	3	4	5
7. I think that I make a good impression on people	1	2	3	4	5
8. I need more self-confidence	1	2	3	4	5
9. I am very nervous when I am amongst other people	1	2	3	4	5
10. I think that I am a boring person	1	2	3	4	5
11. I feel ugly	1	2	3	4	5
12. I think other people have more fun than what I have	1	2	3	4	5
13. I think I bore other people	1	2	3	4	5
14. I think my friends find me interesting	1	2	3	4	5
15. I have a good sense of humour	1	2	3	4	5
16. I feel self conscious amongst other people	1	2	3	4	5
17. I wish I was more like other people	1	2	3	4	5
18. I think that people enjoy themselves when they are with me	1	2	3	4	5
19. I feel out of place when I go out	1	2	3	4	5
20. People push me around more than others	1	2	3	4	5
21. I think that I am a kind person	1	2	3	4	5
22. I think that other people really like me	1	2	3	4	5
23. I think I'm cute	1	2	3	4	5
24. I'm scared that I'll make a fool of myself	1	2	3	4	5
25. My friends think highly of me	1	2	3	4	5

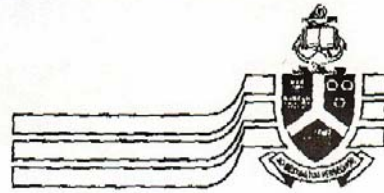
Write down the marks that you scored for the following questions in this space

Write down the marks that you scored for the following questions in this space, after you've deducted it from 6

70 TO 120	No Self image
55 TO 69	Dissatisfied Self image
40 TO 54	Average Self image
30 TO 39	Very Good Self image
0 TO 29	Excellent, too good



Signed Consent Letters



University of Pretoria

Pretoria 0002 Republic of South Africa
Tel (012) 420 2808 Fax (012) 420 3025
Http://www.up.ac.za

Department of Curriculum Studies

1 February 2007

Dear Participant

You are requested to confirm with your signature at the bottom of this letter that you have invited to participate in the research indicated in the content that follows:

HOW DO STUDENT TEACHERS CONSTRUCT AND USE "PHRONESIS" TO ENHANCE THEIR PROFESSIONAL DEVELOPMENT

You are invited to participate in a research project aimed at gaining insight into the meaningfulness of the radical innovation in teacher education, which is the PGCE programme at University of Pretoria. To determine the meaningfulness of this PGCE programme, only the experiences of the Biology (Life Sciences) student teachers will be explored as a case study.

Your participation in this research project is voluntary and confidential. You will not be asked to reveal any information that will allow your identity to be established, unless you are willing to be contacted for individual follow up interviews. Should you declare yourself willing to participate in an individual interview, confidentiality will be guaranteed and you may decide to withdraw at any stage should you wish not to continue with an interview.

Your role in the research will be the following:

- (1) Your participation will be for the duration of one year at specific time periods. The time periods will be discussed and negotiated with the students.
- (2) You will be expected to engage in activities that will reveal their perceptions as facilitators of learning e.g. biographic interview, developing a collage; their experiences of the university-based education e.g. personal reflective journals, participatory reflective class discussions (will involve students, lecturer and researcher) and their experiences of the school-based experience e.g. reflective diaries, researcher observing the lessons taught.

The results from this study will be used to enhance the professional development of student teachers through the construction and use of phronesis (practical wisdom).

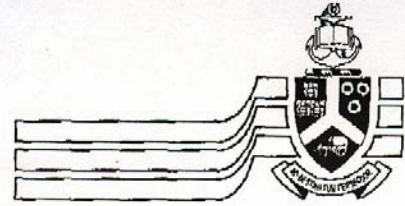
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Participant's signature Bleacoy : Date: 15-02-2006

Researcher's signature A James : Date: 15/02/07

Yours Sincerely

ANGELA JAMES



University of Pretoria

Pretoria 0002 Republic of South Africa
Tel (012) 420 2004; Fax (012) 420 3003
<http://www.up.ac.za>

Department of Curriculum Studies

1 February 2007

Dear Participant

You are requested to confirm with your signature at the bottom of this letter that you have invited to participate in the research indicated in the content that follows:

HOW DO STUDENT TEACHERS CONSTRUCT AND USE "PHRONESIS" TO ENHANCE THEIR PROFESSIONAL DEVELOPMENT

You are invited to participate in a research project aimed at gaining insight into the meaningfulness of the radical innovation in teacher education, which is the PGCE programme at University of Pretoria. To determine the meaningfulness of this PGCE programme, only the experiences of the Biology (Life Sciences) student teachers will be explored as a case study.


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- (1) Your participation will be for the duration of one year at specific time periods. The time periods will be discussed and negotiated with the students.
- (2) You will be expected to engage in activities that will reveal: their perceptions as facilitators of learning e.g. biographic interview, developing a collage; their experiences of the university-based education e.g. personal reflective journals, participatory reflective class discussions (will involve students, lecturer and researcher) and their experiences of the school-based experience e.g. reflective diaries, researcher observing the lessons taught.

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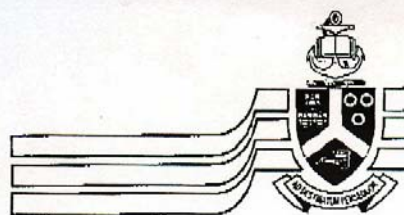
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Participant's signature  Date: 26 Febr 2007

Researcher's signature  Date: 28 Feb 2007

Yours Sincerely

ANGELA JAMES



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1 February 2007

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Participant's signature *AB Ellis* : Date: *9/02/2007*

Researcher's signature *A James* : Date: *10/02/2007*

Yours Sincerely

ANGELA JAMES

APPENDIX 1

SECTION 11

Cycle One – Descriptive data for Chapter 4

Cycle Two - Descriptive data for Chapter 5

Cycle Three - Descriptive data for Chapter 6

Cycle Four - Descriptive data for Chapter 7

Descriptive data – cycle one

4.2. Step 1: Experiential reflections

4.2.1. Bernice

4.2.1.1. *My role as a Life Sciences teacher/educator*

Bernice described how she saw her role as a Life Sciences Teacher in terms of what children should be exposed to when learning Biology. Bernice was of the understanding that children can only appreciate something if they are shown it, “they need to see it, feel it, live it.” She did state though that “this does not happen when Biology is taught”. She saw her role as “I will take my children to a farm to experience the real thing [and my] passion for the subject must be carried out.” Bernice thought that feelings were important as “when people love something and when you discuss it with them and they click, you want to show everyone that others can also ‘see’ what you have discussed.”

Bernice thought that the best situation when teaching Biology is “if you work with theory and practice together.” She stated that “You cannot have theory without practical”. She illustrated her understanding of a Biology practical by “observing leaves and using litmus paper to test for an acid where the children can observe the colour changes with their chommie¹”.

Bernice’s experience of observing Biology teachers teaching Biology led her to belief that “the teacher does not have many resources and they do not have time.” This belief prompted Bernice to “make time for the children to have a bit of a practical experience where they can observe pictures or watch a few slides using group work” when she teaches at a school.

Bernice expressed a concern about her role in the classroom in that she was not ready, and questioned “how will I get them interested and what will happen if I do not get anything out of them”. This concern was based on her observation that “the children sit there with the lights on but no-one is home” (implying that the children are physically present but they are not cognitively present). The concern of how she could learn to get a reaction out of the children was linked to her expectation of how to be an educator in the Life Sciences programme.

Bernice was aware of what was lacking in what she needed to know to be a teacher out in the schools. What she lacked were “the things that I do not know about when the teacher is standing in the front, all the behind the scenes activities, how much of the various teaching aspects.” Her deficiencies raised a concern about where the children’s’ appreciation fitted into the teaching.

¹ Chommie is an Afrikaans colloquial word that means friend.

Bernice said that to be the best presenter she “must not be boring as a boring teacher cannot get the learners to learn”. This awareness informed what she wanted to achieve in the programme “learn how to get a reaction out of the children.” She was also interested in finding out “If we (student teachers) will learn more about the subject or will we learn about how to teach the subject?”

4.2.2. Carol

4.2.2.1. *My role as a Life Sciences teacher/educator*

Carol described her perception of her role as a Life Sciences Teacher as “people could only appreciate something that they love and know about and understand and believe”. She saw her role as providing people with the opportunity to see it in order that “they will believe it as your own experience is important”.

Carol also described her role as a Life Sciences teacher in terms of her feeling of passion and she stated “I know that I have passion as it ‘borrel’ (bubbles) in me”. Her passion though was not really linked to teaching Biology, but it was a passion to help the children. She was aware that “when teaching Biology it is important that children should just learn something.” Carol though thought that learning Biology “if it is just theory or just practical you will not help anyone” She thought that to help anyone she would “put the theory and the practical together [as this] is the best lesson.”

In describing her experience of observing Biology teachers teaching Biology, Carol stated that they “did not have time to teach”. She suggested that if she had to do practicals with the children then she would make time to do them.

Carol expressed a concern about her role in the classroom in that she was “uncertain about the type of relationship that I should have with the learners, must I be chommie, chommie or must I not be chommie, chommie.” A further concern was her fear of the situation “sorting out the type of relationship with the learners.”

Carol did not express any expectations as to how she was to develop as an educator in the Life Sciences. She did indicate her desire to “know how I can learn the best ways of how to help the children, how I can make it (Biology) interesting and how I can be the best teacher”.

When Carol was asked to explore what she was lacking in what she needed to know to be a teacher out in the schools, she indicated that she lacked many things. She turned the focus from what she lacked to what she needed to be when she said “The teacher that I was with was good and I am trying to put my finger on it, what I need to know to be good, that is why I am here”. She was aware of her needs and also what she wanted to achieve in this PGCE module. She stated that she wanted to be “the best teacher that I can be and I do not want to be the teacher that others expect me to be. Just what I can be; I want to

decide what I will be”. This thinking was evident in her thoughts about what is required to be the best presenter. She stated “you have to develop your own style and methods. Every teacher has his/her own style and methods and they know when to use it and when it is important”. What was interesting was that she wanted to be the best and was “prepared to try new things and use new things”. But in trying new things she would not feel comfortable if “people tried to convince me that the ideas work for them therefore they should work for me”. An essential aspect of trying new things was that is that if you try to be “what you are not as you will not feel it”.

Carol was interested in finding out “What will we do, will we learn more facts in Biology, will we learn more about the curriculum, how will they get us to learn how to teach Biology”. She thought that the specialisation lecturer was going to teach them (student teachers) how to teach Biology. She was also interested in wanting to know “when I am at a school will I know what stuff I need to teach the grade nines, will it be the same Biology that I had at school?”

4.2.3. Mack

4.2.3.1. My role as a Life Sciences teacher/educator

Mack described how he saw his role as a Life Sciences teacher in terms of his appreciation for nature and living things and the importance of developing this appreciation in learners. He linked this importance to current world needs by stating “the world needs a more appreciated attitude towards living things....and we need to bring that love and appreciation of nature to the children.” But he was concerned that this appreciation was not developed as learners had “a lot of learning words”.

Mack also described his role as a Life Sciences teacher in terms of his feelings for nature as he “always had a passion for nature”. He felt that this feeling and his enjoyment for reading Zoology articles could enable him to portray this to learners. But, he was concerned with “how I could teach this to my students.”

Mack stated that when teaching Biology “you cannot split what you want to teach in Life Sciences from the theory to develop appreciation, you have to show them”. He did warn though that “you could bore them with practicals as well.” Mack felt strongly that appreciation was a foundation for the learners’ learning and that this appreciation could be developed by concrete experiences. He thought that this was possible if a teacher linked Biology practicals to the learners’ thought processes.

Mack stated that from observing teachers teaching Biology they taught the theory in the syllabus and they did not have an “option as to what theoretical work they can teach.” He thought that all Biology teachers should give learners concrete experiences not just theory.

Mack’s concern about his role when getting into the classroom was that even though he had a passion for the subject he “may not be able to really portray it adequately to my learners”.

Mack's expectations as to how to be able to become an educator in the Life Sciences were informed by his and his school friends' experiences of learning Biology. He expressed a desire "to do things differently" as many of his friends at school hated Biology. Mack did not want to teach Biology in a traditional sense. He wanted to get the best out of his students and to develop their respect for nature.

Mack knew that he needed to be "aware of the sort of the degree to which I must sort out what [content] I should be teaching in the class." He questioned if he should only be teaching the terminology and the percentages for subject content and appreciation. Mack was interested in developing "more than just the facts" in the programme, as he could find out the facts himself.

Mack expressed his desire to be a "passionate teacher that makes the work fun and always great, not this boring thing". He was aware that to be a good teacher you need to get learners to express their potential. He needed to be the best. To achieve this he thought that he needed to "find out what works for him. As if he was going to "copy another teacher it is probably not going to be really as effective or really work."

Mack was interested in finding out where education is heading as "all the subjects are changing and will Biology change much". His concern was "Is there place for us to make a change in it (the subject Biology)."

4.3. Step 2: Reflecting and interpreting

- What was the role of the teacher-educator in the discussion-group interview during the experiential reflective step of the cycle and why did he have this role?

The specialisation lecturer stimulated the student teachers to participate in the discussion group interview by using a *questioning strategy*. He posed questions to: prompt the student teachers to respond; to seek clarity about the statements that they made and to understand the student teachers' underlying meaning. He encouraged the student teachers to dig deep and to explore their feelings by asking "you say you have passion, how do you know that you have passion?" He also provided opportunities for the student teachers to ask questions during the discussion but stated that "I will only answer the questions if it is the right time for me to do so". He also inspired them to use their past experiences to try and respond to their own questions. He *motivated and encouraged* all the student teachers to participate in the discussion by saying "all of you talk", and "what do you all say" and "do not look at poor Mack all the time, you all must talk." He provided support saying "it sort of seems that you pretty much know what you should do". This support acted as a further stimulus for the student teachers to think further and deeper about their particular experiences and concerns. He provided *reassurance*. When a student teacher asked "how will we know what to do at the school, he replied that "you must know precisely what is required at the school and you will find this out when you are at the school". He also *set the scene for the year* by stating that "we cannot ignore what you need to be able to do and at the end of the year your professional portfolio will be used for assessment." The purpose of the portfolio was shared by indicating that "the

idea for the portfolio was to see what develops and how it develops.” The nature of the interaction between him and the student teachers was indicated by “you will engage in discussions with me, as to how you are experiencing what and how we are doing, how you suggest we could improve on that for the benefit of everyone.”

He seemed to *project a power* relationship as evidenced in the communication pattern. Even though he encouraged the student teachers to participate, he posed all the questions and he prompted the students to respond. This was the first interaction between the student teachers and the specialisation lecturer so this power relationship was essential in driving this interaction. This power relationship therefore can be viewed as constructive to exploring and giving meaning to the **baseline phronesis** (practical wisdom, practice theory) of each of the student teachers.

It is evident that the specialisation lecturer played a multiple role. He was concerned with the holistic development of the student teachers. He did not use the interview to just elicit information from the student teachers; instead he actively engaged them in developing intellectually and emotionally. During this time the student teachers also worked through their perceptions and underlying fears of teaching that they were experiencing.

- What was the student teachers’ participation in the group discussions?

All the student teachers participated but the extent of their participation differed. Initially, Mack and Bernice responded to the first two questions asked and Carol’s first response was only made when she was directly prompted by the specialisation lecturer. After her first response she seemed to relax and open herself more to question and respond to questions. Mack was aware that he was responding to the questions more than the others when he stated “no, she is going to rip my brains out” and he laughed and did not respond. He spoke in reference to his brain as he had shared extensively. When responding he did not just supply a simple response to a question, but provided detailed responses. All the student teachers made comments or answered questions, in some instances, to share their experiential reflections and, in other instances to support their colleagues’ inputs. The student teachers were relaxed during the discussion group interview as they joked and laughed with one another and the specialisation lecturer. This relaxed spirit was essential for the student teachers to share their reflective experiences openly and to feel a part of the process of learning.

- What do each of the student teacher’s understand about his/her role as a Biology teacher and about teaching Biology; the role of learners in the learning process, and what informed his/her description of the particular roles?

Bernice saw her role in personal and professional attributes. These attributes were interlinked - passionate and interesting Biology teacher. Her desire was to be a unique, interesting Biology teacher when teaching Biology. She wanted to use teaching and learning strategies that exposed learners to

concrete experiences. What is surprising though is that Bernice adopted the behaviourist approach as her understanding of teaching was that the teacher transmitted the knowledge to the learners.

Bernice displayed a weakness in her role as a professional. Her weaknesses were: getting learners interested and, responding to and developing an understanding of the planning that teachers have to do before they can teach a class. She was aware though of the professional challenges - the lack of time and resources at schools. Her foundation (purpose) for teaching Biology was based on developing children's attitudes and values, and exposing them to concrete structures.

Carol saw her role in both personal and professional aspects. The personal aspect focused on affective (passion bubbling in her) and individual personal aspects – she wanted to be herself. Her professional aspects focused on developing as the best teacher that she could be and to feel comfortable with the type of teacher she was.

Her role in the teaching and learning context was to provide learners' opportunities to use their personal experiences as these were important for learning. She also wanted to expose learners to theory and practical aspects of Biology. Even though Carol was aware that the learners must experience concrete things, she still viewed the learners as dependent on the teacher. A significant professional aspect is that Carol was open to change as she wanted to try new things out for herself. She wanted to make her own discoveries about teaching, not to be told about how to teach by others.

An intertwined personal and professional aspect which illustrated Carol's weakness was on how to manage the type of relationship that she should have with her learners and how she could make the teaching of Biology interesting within the time constraints that teachers experienced. Carol used the occasion (observing the Biology teacher) as an assessment of her own performance and a re-definition of what she needed to be - to be a good teacher.

Mack saw himself as a teacher in terms of personal affective and performance attributes. The professional aspects were in terms of teaching and learning strategies and the goals for teaching learners.

Even though Mack was aware of his strengths and his weaknesses, he doubted himself and his ability to portray his passion adequately. He was aware of professional challenging aspects: time; theoretical work in the syllabus; exposing learners to concrete experiences; use of resources; volume of subject content and the development of learners' appreciation. Mack though, was aware of what he wanted to develop in the learners.

Mack was aware of his role and that of the learners in the teaching and learning context. He was aware that: the teacher had to set the scene for learner encounters; of the importance of context (scene) and that

learners all had their own ways of responding to different things. An important aspect for Mack was to develop the learners' attitude to nature.

Mack's experience of Biology at school extensively informed his thinking about how to teach it. His personal experiences both in life with nature and at school were necessary for him to construct his understanding of his role as a teacher.

- What terms linked to education did the student teachers use, what was their understanding of them and why did they use them?

The terms that the student teachers used can be used to illustrate their understanding of education, the role of the teacher and the student.

The words that **Bernice** used: learners learn; teachers teach; children experience the real thing; transmission of the subject were associated with Behaviourist practices

The words that **Carol** used: every teacher has his/her own style and methods;; children learn and the best teacher cannot be limited to Behaviourist practices. Clearly this is a transformed position, which is in line with the requirement of the curriculum policy documents.

The words that **Mack** used were: developing learners' appreciation; portray passion to students; teach to students; teachers teach. These words are associated with mixed Behaviourist and constructivist tenets to teaching and learning. This is further evident in the following metaphors for the teaching terms words Mack used:

Teaching is like the wind in the sails of a boat; this is because it directs the person in the right direction across the ocean, without this direction the person would sail aimlessly around the body of knowledge;

The teacher is like the sails of a boat; this is because with some fine adjustments, the teacher is able to maximize the students' potential and growth (Professional portfolio, 2004).

- What feelings did the student teachers express about teaching or associated to teaching?

Bernice expressed a feeling of passion for the subject, but she did not express how she felt about teaching.

Carol expressed a feeling of passion that bubbled in her, but it was not really associated with teaching Biology. It was associated with teaching in general - she would be able to help the children. She also expressed the feeling of fear for what she did not know about teaching and the feeling of uncertainty about the type of relationship she should have with learners.

Mack expressed a feeling of passion and enjoyment for nature and he wanted to portray this to his learners when teaching them.

- What underlying assumptions did the specialisation lecturer have for asking the student teachers to share their understanding of the role of teachers and student?

When the student teachers entered the programme the specialisation lecturer established their baseline understanding of the role of teachers and in an attempt to explore what and how this understanding would change during the programme. What was significant was that the student teachers needed to be aware of their own perceptions about these roles from the outset of their professional development experiences. The specialisation lecturer was aware that the student teacher's construction of "phronesis" would be strongly influenced by their existing perspectives and understandings about teaching and learning. This thinking is reflected in the literature by Hollingsworth (1989); Holt- Reynolds (1992) and Resnick (1987).

- What expectations did the student teachers have of the programme?

Bernice wanted clarity as to what the focus of her development was going to be, whether it was about the subject or how to teach the subject.

Carol wanted clarity about the focus of her development - Will it be learning about the content of Biology, the curriculum or how to teach Biology?

Mack was concerned about his role as a teacher teaching Biology in South Africa where a change in education was in place. Mack wanted to teach Biology differently to the traditional approach and he wanted the space and scope to make that change.

4.4. Step 3: Planning Action

During this step Professor Ned (specialisation lecturer) planned the intervention (action) activities. The purpose of this intervention was to challenge the student teachers to change their existing preconceptions of teaching and learning. This intervention comprised two types: intervention one and intervention two. Intervention one during week two of the programme, focused on each student teacher observing two local Life Sciences teachers teaching Life Sciences in their respective schools. Intervention two during week three of the programme focused on each student teacher participating in a five day workshop whose theme was 'What is an educator really?' This workshop was conducted at a remote destination from the university campus at a Nature Reserve called Hammanskraal.

4.5. Step 4: Taking Action

4.5.1. Bernice

4.5.1.1. School observation

Bernice stated that she had “sort of forgotten after three years (the length of time she spent at university to complete her degree) what it is like to be at a school.” She said that “it was a good experience” because it made her more determined to teach.

4.5.1.2. “What is an educator really” - Hammanskraal

a. Challenged by a paradigm shift

Bernice stated that “everybody was confused by the facilitating learning thing” but she was not confused. She attributed her lack of confusion to her experience of a lecturer who had taught her. This lecturer expected her to think for herself and not to rely on answers been provided by her (the lecturer). Bernice established some justification and clarity about her decision to teach when as she stated that “I am now doubled as positive as I was when I first joined the programme to teach.” Therefore this experience was a re-assurance for her about becoming a teacher.

b. Interpretation of Personal Profile questionnaires

(i) Bernice’s scores on her Neethling Personal Skills Instrument were L1:67; L2:62; R1:92; R2:79. According to these scores, Bernice has a high preference for a R1 and an average preference for a R2. This indicates that Bernice functions as a right-brained person. In linking this finding to the type of person that Bernice is the following was stated: a person who searches for alternatives, prefers the big picture, not the detail, idea-intuition, strategy, synthesis, integration, risk, restless, becomes bored quickly, experimenting, diversity, comfortable with chaos, fantasy, surprise, association. The teaching preference for the type of person described above is an R1 trainer/teacher. This teacher usually gives a holistic view of the lesson. This teacher prefers to link it to other subjects and to point out how it applies to the “real world”. This teacher will encourage spontaneous participation and create opportunities to experiment and visual aids will form an important part of the lesson. Lessons could be unstructured, with the teacher deciding on different content, etc. on the spur of the moment. This teacher could create opportunities to speculate, to strategise, discover and very importantly have fun during a lesson. Administrative duties, deadlines and thoroughness can sometimes be lacking.

(ii) Bernice’s score for the Temperament Test indicates that she is a Popular Sanguine (extrovert) person who is outgoing and people-oriented.

(iii) The score for the Self-Image test (50) indicates that she has an average self image. These scores support the identity description that she gives of herself.

c. An identity description (Who am I?)

I love horses and was practically raised by my pony which I have had since I was six years old. I am always friendly, positive and cheerful – except when I am in traffic. I am patient, spontaneous and confident. I am adventurous and love challenges. I enjoy doing my own thing. I am sometimes stubborn and I am strong-willed. I need space; I enjoy being alone and the outdoors. I suffer from claustrophobia, vertigo and am touch –sensitive. I have a large personal space. I am a bit of a ‘nervous Nelly’ and frighten easily –that’s why I am always looking around me! I am lively and always busy. I hate sitting still and get bored very easily! I only go out to dance. I think it’s impossible to really know me as I am an introvert (who is good at hiding feelings) and I do not trust people easily. I am someone that when I am told that something is impossible or not, a lot of people get this done – I am a natural rebel – and I will say I can do it. The moment I can be different I am happy. I am someone who has to go and study stuff and repeat it and then I know it and then I am comfortable.

d. Learning task design

Bernice designed her first learning task at Hammanskraal. She stated that she was proud of it and it “did not seem very difficult”. She included learning task features: learning area, learning phase, theme, resources, class organization and time allocated. She described the class organization as children working in two large groups and then in groups of 4. She had also included specific outcomes and assessment criteria using her own ideas of what they meant. She was aware though that her “perception of a good learning task was obviously a bit skewed” but she used it to illustrate her development.

e. Concept map - Practice theory of facilitating learning

Bernice did not have a concept map for this cycle in her file.

4.5.2. Carol

4.5.2.1. School observation

No reflection notes were inserted in her professional portfolio

4.5.2.2. “What is an educator really” – Hammanskraal

a. Challenged by a paradigm shift

Carol said “No one knew what to expect from the week at Hammanskraal – the only clue we had about this week was printed on our year programme: ‘what is an educator really?’” Carol stated that when she read this that it sounded useless to her as she already “knew what a teacher was and what I wanted to achieve with my learners.” She expressed her irritation by stating “So how can they tell me what a teacher should be?” But she also expressed surprise in that “It took one day to show me that maybe I didn’t have everything figured out and that my idea of education was challenged.”

Before Hammanskraal, Carol thought that her role as a teacher would be to convey and explain information to her learners. She stated that “the role of an educator was conveyed in a totally new and different way to me.” Her ideas of what education was and the kind of teacher she wanted to be “were shattered.” She expressed her feeling “I felt lost and confused and yes, I was very skeptical!” She felt skeptical about the new paradigm.

b. Interpretation of Personal Profile questionnaires

(i) Carol’s scores on the first questionnaire were L1:80; L2:81; R1:66; R2:73. According to these scores Carol has a high preference for a L1 and a L2 and she functions as a left-brained person. In linking this finding to the type of person that Bernice is the following was stated: seeks accuracy, digs deeper into a problem, works for precision, critical correctness – not to make mistakes, organization and promptness. The teaching preferences for Carol’s score of L1 and L2 are for a formal lesson and the use of a textbook or other teaching material. The lesson content is usually well-planned and presented in a sequential order. Putting content into practice is very important to this teacher and therefore repetition and reinforcement are strong elements of the teaching style. Thoroughness is very important and untidy and incomplete work is not tolerated. This can be an authoritative trainer who likes to be in control of the situation at all times. This trainer could resist new teaching methods and could tend to be inflexible with regard to change within the system.

(ii) Carol’s score for the Temperament inventory indicates that she is a Perfectionistic Melancholy (introvert) who is withholding and task-oriented.

(iii) The score for the Self Image Evaluation Test 70 – 120 is no self image. Carol obtained a score of 71. This indicates that she has no self image or does not have fixed ideas about her image of who she really is. The justification for this is evident in her identity description of who she is.

c. An identity description (Who am I?)

I am a good listener and not a ‘talker’. I will rather listen to people than chatter away. I can get along with any/sort/age/race etc. person. People are so interesting and you can learn so much from each person. I am a very stable, hardworking and reliable person. You can really count on me. Although I am very shy and an introvert I will not shy away from my responsibilities and will stand up for my beliefs and values. I will not judge a person for his/her belief and values (even if I think they are wrong), because I truly believe each person has the right to his/her own opinion and have the freedom to speak his/her mind.

I can be critical and negative especially in frustrating situations. I am not a very emotional person and I won’t easily show my true feelings to people, but other peoples’ emotions and feelings are of the utmost importance to me. I sometimes expect too much of people and of myself and can then be easily disappointed if my expectations are not met. I will make up my own mind about what must happen or what must be done and then do it. I like to plan and organize to make sure everything happens according

to schedule. I am responsible, strong willed and don't like changes in my life. I am not very creative (my spring is definitely hidden deeply away), so that side of my brain does not get enough exercise.

d. Learning task design (See Appendix for copy of the design)

When Carol was asked to design a learning task, she had no idea of what it was as her first reaction was to say “design a what?” She indicated that this new experience was a “huge challenge for me and I felt a bit lost and confused at the time.” Carol was going to use this first designed learning task to build and improve on her future learning task. She included learning task features: learning subject, learning phase, time allocated, class organization, resources (classroom), programme organization, problem, resources and worksheet, constructing of meaning (content), competencies acquired, relationship, meta-cognition, co-operative learning, feedback learning outcomes and assessment standards. She viewed this experience of designing a learning task as “a momentous moment in my development as a facilitator of learning.”

e. Concept map - Practice theory of facilitating learning (See Appendix 2 for a copy of the concept map)

Carol's concept map indicated that the concept of education meant preparing the child for knowledge. This knowledge preparation required a facilitator of learning. A facilitator of learning has the following characteristics: versatile; can communicate; quick thinking; enthusiastic and fair. A facilitator of learning is unique and s/he works to a result/product which is a challenge and requires time. The use of resources supports facilitation. Assessment is important and is concerned with achieving an outcome. When the outcome is achieved, this feeds back to the facilitator of learning and the knowledge that was prepared. If the outcome was not achieved then the facilitator of learning needs to prepare something different.

Carol's concept map focused extensively on the characteristics of a facilitator of learning. She was aware of the link between assessment and outcomes, and that learners need to be challenged but that they require time to achieve the appropriate outcomes. The concept map was represented in a flow chart where one term was linked in a linear manner to another and only three linking terms were used. (See appendix for a copy of the concept map).

4.5.3. Mack

4.5.3.1. School observation

Mack stated that the week of observing at the school got him to really feel motivated to go out and teach.

4.5.3.2. “What is an educator really” – Hammanskraal

a. Challenged by a paradigm shift

Mack stated that his experience at Hammanskraal “was a challenging one” in that he was confronted by many different things. He developed knowledge about the diversity of learners. He said that “I experienced that students differ according to their intelligences and they must be treated differently.”

b. Interpretation of Personal Profile questionnaires (Refer to appendix for report)

- (i) Mack's scores on his Neethling Personal Skills Instrument were L1:79, L2:69, R1:84, R2:68. According to these scores, Mack has a high preference for a R1 and an average preference for a L1 person and he functions as a right-brained person. Mack according to the analysis scoring sheet is a person: who searches for alternatives; prefers the big picture, not the detail. His characteristics are idea-intuition, strategy, synthesis, integration, risk, restless, becomes bored quickly, experimenting, diversity, comfortable with chaos, fantasy, surprise and association. His teaching preferences are those of a R1 trainer/teacher. This teacher usually gives a holistic view of the lesson, prefers to link it to other subjects and points out how it applies to the "real world". This teacher will encourage spontaneous participation and create opportunities to experiment. Visual aids will form an important part of the lesson. These lessons could be unstructured, with the teacher deciding on different content, etc. on the spur of the moment. Opportunities to speculate, to strategise and discover are often created. Also a fun element is often part of the lesson. Administrative duties, deadlines and thoroughness may sometimes be lacking.
- (ii) Mack's score for the Temperament inventory indicates that he is a Popular Sanguine (extrovert) person who is outgoing and people-oriented.
- (iii) The score for the Self Image Evaluation (59) indicates that he has a dissatisfied self image. He felt that he was seriously lacking in self confidence and tended to doubt himself a lot. He sometimes felt that he relied too much on the approval of others and too little on his own approval.

c. An identity description (Who am I?)

I am a Christian and therefore I follow the Christian beliefs, doctrines and modes of worship. There are a number of things that make me enjoy life to the fullest. The first and most important is my belief. I feel that without my belief I would not have reason to live and my life would simply not make sense.

I cherish my family; I have a large group of friends and I love children. I am a holist by nature and it is important for me to see the bigger picture rather than the isolated facts. I like to know how things are connected, rather than the exact detail of what they are. I am also a realist and I am practical. Things must seem as if they will work in practice or else I will not pay much attention to them. This can be limiting because if I cannot see the immediate solution to a problem I would rather move on to the next one that seems more practical and realistic.

I am also what I call an intro-extrovert. That is I am not quite an introvert, but not quite an extrovert. I enjoy being sociable but sometimes find it rather challenging: this is especially the case when I am talking about myself to someone. I sometimes have the problem of not expressing my feelings adequately enough. This can cause me to bottle up my feelings, which can lead to me getting very distressed at times.

I have a fairly good self image of myself and sometimes I feel that I am seriously lacking in self confidence and tend to doubt myself a lot.

I am pretty good at leading people through a task; however where I do have problems is in the planning of that task. I sometimes feel that I rely too much on the approval of others and too little on my own approval. People get frustrated with me because I seem indecisive. I do not like to voice the views that I have because I am scared of standing on someone's toes. I am very dedicated to a cause and will therefore execute a task to the best of my ability, but I do procrastinate. I believe in simplicity and balance.

d. Learning task

Mack's learning task design had the following features: learning area, learning phase, specific outcomes, assessment standards, resources, class organization, resources and time allocated. The class organization stated that children will work singularly and work in groups of 4. This learning task had one specific outcome and one assessment standard which were not in line with the requirements of the Life Sciences curriculum. It did though have some essential sections that are expected in learning tasks: outcomes, assessment and a meta-learning aspect of facilitating learning. (See appendix for a copy of Mack's Learning task).

e. Concept map - Practice theory of facilitating learning (See Appendix 2 for a copy of the concept map).

Mack's concept map had the concepts of facilitating learning, learning task design, learning task operation, learning task feedback and learning task consolidation. The relationship between the concepts was shown by a unidirectional line linking the concepts in a continuous cycle where there was a sequential flow from one concept to another. There were no linking words between the concepts.

Mack understood facilitating learning as having a learning task design where the requirements and guidelines were provided. This learning task design was used to provide the learning task operation which focused on a presentation and execution. The execution was concerned with co-operative learning and meta-learning. The learning task operation fed into the learning task feedback and this was concerned with challenging, clarifying and encouraging the learners. The feedback fed into the learning task consolidation. This feedback focused on the role of the facilitator of learning and the learner.

Mack had a basic understanding of facilitating learning. He used four basic concepts and did not illustrate many relationships amongst the concepts. Mack thought that facilitating learning was an action (path) that had a particular sequence that had to be followed.

4.6. Step 5: Reflections on taking action and interpreting

4.6.1. Bernice

4.6.1.1. School observation experience

- I was at the school and all I thought of - This is what I want to do – I want to be between these kids. I want to teach them sports, I want to do everything. It was so much fun standing there between the children and seeing all their faces looking up at you.

Why did Bernice have these particular thoughts and feelings?

Bernice had these thoughts and feelings as the experience of being in the classroom and experiencing the *teaching* of Life Sciences got her psyched up to teach. She stated that standing there and hearing the teacher say “this class is impossible” made her more determined to start teaching. She stated that she could not wait to go so that she could prove them wrong. She said “the feeling of I can do it, I sommer² want to start so that I can see if I can do it”.

4.6.1.2. “What is an educator really” – Hammanskraal

- I gained an important experience at Hammanskraal

What did Bernice gain from this experience?

Confirmation that teaching was what she wanted to experience and she developed a positive attitude about teaching.

- When you examine my very first learning task, the following becomes clear:
there is no proper logical presentation, the order is wrong. There is no problem statement, only a boring question. The outcomes that I wrote were my own ideas and do not conform to the requirements of the RNCS. The learning task
is organised as one long story and this gives the impression of a rough draft, rather than a professional learning task.

How did Bernice become aware that her learning task was not appropriate?

All the student teachers were given documents that had a learning task format. Bernice checked her learning task against the required format and she experienced the change and came to the decision that her perception of a good learning task was obviously slightly skewed.

Bernice’s reflections did not include or focus on why she had the thoughts and feelings; who she is; her understanding of education, the role of the learner and the teacher; her concept map; her Brain profile, Temperament and Self image tests.

4.6.2. Carol

4.6.2.1. School observation experience

No reflection notes were inserted in her professional portfolio

² Sommer is an Afrikaans word that means just.

4.6.2.2. “What is an educator really” – Hammanskraal

- What is the context/purpose of this quotation? Some introductory line will help. The week at Hammanskraal was an experience I will never forget. It was a very difficult week for me. So much new information was bombarded onto us and I found myself in a very negative and skeptical place. The paradigm shift that I learnt was totally different to what I learnt at school and university. All the new terminology, concepts and high expectations made me feel overwhelmed. I truly felt that they were expecting too much from people who never taught before in their lives. As I look back I could see that they definitely threw us in the deep end and expected us to sink or swim. We were challenged beyond our abilities so that our maximum potential could be achieved.

Why did Carol have these thoughts and feelings? Why do you have these questions, or where do they come from?

It was a totally different experience from what she had ever had before. For the first time in her life she was challenged to the maximum. As a novice, the newness of the language and the activities where she had to constantly work out what she understood and felt was different to any education experience that she had in the past.

- I could not understand why I should write about myself and what does this have to do with teaching. While I was struggling with this, I could really think critically about myself, my points of view, my ideas and what I viewed as important in life. I got to know myself better. I never thought about what I want to achieve as a teacher other than teaching. By critically evaluating what others would say of me gave me the opportunity to get to know myself and my capabilities.

Why did Carol have this thinking and why did it change?

Carol thought that she was attending the programme to learn how to teach, not who she was, as she already knew this. She was aware that knowing your strong and weak points and making a concerted effort to improve them can only lead to development and growth personally and professionally.

- Although it was a frustrating and hard week, looking back on it, it was definitely the place where new concepts and ideas were planted. It was the place where I started to think differently about education. It was a new beginning for me as an educator. Although I was very skeptical about this new paradigm it was the ‘birth of a new facilitator of learning.’ I thought all the time that a teacher was someone who explains, transfers and promotes the potential of a learner. This new idea, that learners construct their own meaning and it is his/her responsibility and that they must reach their maximum potential with the help of a teacher is new for me.

What is Carol’s understanding and **how** did she come to have a different understanding of education, the role of the learner and the teacher?

She constructed new meaning about concepts and she started thinking differently about education. She now saw herself as a facilitator of learning not a teacher. This change in thinking was due to the new,

different and challenging experience. Her understanding about education, the role of the teacher and the learner was a new one and a teacher should see everyone's (learners') individual uniqueness, where learners construct their own meaning. It is his/her (learners') responsibility and that they must reach their maximum potential with the help of a teacher.

- We were introduced to the inside out paradigm, multiple intelligences and facilitating learning.....The multiple intelligence idea was a real eye opener. The inside out paradigm and facilitating learning was totally new concept to me and at Hammanskraal – I was very skeptical but willing to think about it. The meaning of an item does not lie in its name but in the concept as names are used only for communication to take place. The multiple intelligence experiment – (done with leaves) was a new experience. The different intelligences also opened my eyes that different learners use different intelligences.

What were Carol's experiences of the new knowledge and **how** did she deal with this?

She experienced the inside-out paradigm, multiple intelligence and facilitating learning and that understanding concepts and not just knowing the name is important. She was very skeptical but willing to think about it. As a novice she was not resistant to the new ideas but felt challenged, overwhelmed and skeptical. She stated "I realised how important multiple intelligence in the classroom was and that I should make use of it."

- We had to reflect at the end of a day/session. These reflections meant something to my development as a facilitator

How did these reflections come to mean something to Carol's development as a facilitator?

In the reflections, Carol shared the newness of the experience that she was going through. She also expressed the feelings that she had, the knowledge that she had gained and also what she still needed to learn and think further about. The reflections were descriptively written with no deep analysis.

- The idea of co-operative learning is a new idea for me, since group work was always a part of my thoughts. I therefore had the beginning of how to include co-operative learning in the structure of my learning tasks.

What was her understanding of a learning task? And how did she develop this understanding?

Carol was aware that the structure of the learning task had to have co-operative learning in it.

- The whole process is still new for me. It is very interesting but I am still skeptical over the matter. I will first myself have to try it out to see if it works. It sounds very idealistic but now that we have come to the end of the week everything is possible.

What was the inner turmoil that Carol experienced and why did she have it?

At Hammanskraal, all Carol's ideas about education and teachers were shattered. She felt lost, confused and skeptical. She thought that she would have to do it herself in order for her to believe that it works (If

you see it, you'll believe it). She thought that even though it was idealistic she was open to the possibilities.

- As I look back on that first learning task design assignment now, it is hard to imagine that there really was a time that I didn't know what a LTD (Learning task design), LTP (Learning task presentation), LTE (Learning task execution) and LTF (Learning task feedback) was.

Why did Carol have this experience?

Carol was very confused and uncertain about a learning task design. She did not know what should be included and what should be left out, how it should be organized and planned.

- A concept map was a foreign concept and it was difficult to put your views on paper about education in this new manner.

Why did Carol find the construction of a concept map difficult?

From my concept map it is clear that I did not understand the new concept introduced to us. I couldn't figure out where the concept was supposed to fit in.

- Reading my brain profile as well as the temperament and self-image test results I could see myself clearly in the results. The tests described me with great accuracy.

What were Carol's thoughts and feelings about completing a brain profile and what did she learn from this?

My brain profile illustrated that I am a teacher who prefers a formal lesson and the use of a textbook and that I can resist new teaching methods and be inflexible regarding change within the system. The test confirmed the type of person that she is.

4.6.3. Mack

4.6.3.1. *School observation experience*

- I really want to teach now.

Why did Mack have this feeling?

He felt bored sitting in the class and he wanted to see how he could do in the classroom.

4.6.3.2. *"What is an educator really" – Hammanskraal*

- I now realise that the challenge of my future profession does not lie in the content matter but rather in the individual student. Every student is different and must be treated as such. Each student will have different ratios of the various intelligences.

What brought Mack to the realisation that the individual students differ and that they are the challenge rather than the content matter?

He was exposed to the discussion about multiple intelligence where individuals differ according to their intelligences.

- It is a challenge to improve and diversify the learning tasks for the students in order that they may construct more meaningful knowledge in their minds and by so doing be brought into realization of their maximum potential. The learning tasks can always be improved and therefore it makes teaching a very dynamic and creative profession.

How did he develop an understanding of how to develop a learning task in order for learners to construct meaningful knowledge and to develop to their maximum potential?

Phronesis is concerned with the action of student teachers drawing up a learning task and declaring their baseline understanding of a learning task using their past experience.

- I feel much excitement about my profession; however I am also rather hesitant.

Why did he feel both excitement and hesitation about his profession?

Mack was not able to always carry his great ideas across to reality. He could though at the present time, see how his could be used in a practical way in the classroom.

- I feel that a very important thing that I have learnt is the fact that education is not about the transfer of knowledge from the teacher to the student.

What was the change in Mack's understanding of education, role of the learner and teacher?

Mack's understanding of education is that it is rather the construction of meaningful knowledge by the student for the student. The teacher is therefore only a facilitator in the process and not the source of the process or the information.

How does Mack come to have a different understanding of education, the role of the learner and the teacher?

He was exposed to experiences of developing an understanding of what a teacher, educator and facilitator are. Students were asked to first share their understanding of this and then to read and discuss these understandings to bring them to the realisation of the most appropriate meaning. They also had to read the document: What is an educator?

- Another very big misconception that I had was the link between outcomes-based education (OBE) and group work - the fact that OBE does not consist of group work but rather of co-operative learning.

How did he come to realise that he had a very big misconception?

OBE is not concerned with group work but co-operative learning. The difference is that in co-operative learning, the student already has been through meta-learning and therefore understands the work. The co-operative learning is based more on developing inter-personal skills.

- The main fact that I think that I have learnt is the fact that a human being (a student) is ultimately the application of his or her potential.

What is his understanding about the potential of humans and how does this relate to students? How did he develop this understanding?

The potential that a human-being (student) has is however limited and therefore the amount to which a person applies their potential in their life is solely due to the attitude of that person towards their potential. A person can also never reach a maximum potential because there is always something more that can be achieved.

- I have started thinking more about myself and I think that it is a very important thing that you have to really know more about yourself first which I guess in my life I really have not. To be a facilitator I need to be different.

What did he think that he needed to be different in order to be a facilitator of learning?

Mack thought that the first thing that he needed to change was his self-confidence. He thought that he needed to believe in himself and believe that he had the potential to make a difference in this world and in the students' lives. He thought that he must therefore begin to believe that he had a valid point to make and that even if someone else also has a point that he had the right to stand up for his point and for what he believed. He needed to read what other people had to say about effective communication. Ultimately, he thought that it was only through practice that this could improve and therefore he would have to force himself to communicate effectively. He needed also to plan his life more and to stop taking a laid-back approach. This would prevent him from procrastinating and becoming frustrated when he could not complete his work to the best of his ability.

Mack's reflections did not include or focus on his reflections; concept map, his brain profile, temperament or self-image tests.

4.7. Step 6: Evaluating Action

This step focused on evaluating the action (intervention) of this cycle and on what feeds into the next cycle. In evaluating the action I read each student teacher's baseline "phronesis" (practice theory) of the role of a teacher as written in step 1. I then compared these responses to those that the student teachers presented in step 4 and 5. These reflections included the learning task design, the role of the facilitator of learning and learners. I then analysed and assessed the intervention on the basis of each student teacher's reflections about their constructed "phronesis" of facilitating learning. The analyses and evaluation of the intervention is presented firstly as general comments and then as a case for each of the student teachers below.

4.7.1. General comments - analysis and evaluation of the intervention

The student teachers were immersed in new experiences. These experiences challenged their thoughts, beliefs and their feelings about education, the role of a teacher, learner and more importantly themselves.

They experienced intense feelings of frustration and surprise with what was expected of them, what they expected of themselves and also with what they had achieved. What was significant was the impact of the new experienced thoughts, and actions on their construction of “phronesis”.

The student teachers explored, challenged and constructed their identity as individuals; their understanding of the role of a teacher, their knowledge and understanding of the role of a learner, a learning task and facilitating learning. They were in the process of challenging and changing their own beliefs about facilitating learning. But for this to be maintained they would require further exploration and challenging over an extended period of time (Kagan, 1992). Furthermore, for student teachers to be facilitators of learning, their beliefs should be that learners are constructors of knowledge and teachers facilitate a process of learning (de Kock & Slabbert, 2003). The student teachers were in the process of constructing these beliefs. But for these beliefs to be fully constructed they would have to be exposed to different experiences and thinking about what it ought to be (Korthagen, 2001).

These interventions challenged the student teachers’ understandings and they, in turn, questioned and modified their understandings. The student teachers started to think differently about education, the role of the facilitator and the learner. These experiences were important for them to construct the knowledge of education as evident in the new paradigm and to become aware of their competences of facilitating learning.

4.7.1.1. Bernice

As a result of the intervention Bernice’s decision to teach was confirmed and justified and her attitude to teach was re-affirmed. Bernice was aware that teaching is what she wanted to do and she was eager to start working with the children. She shared that she had developed a positive attitude to teaching. But a further intervention is required to extend Bernice’s understanding and positive attitude to facilitating learning and then for her to maintain this attitude. Bernice was aware that she needed to develop her knowledge and skill of developing a learning task.

Bernice needed to be provided with further experiences in developing a learning task. There is a need to elicit her understanding of education, the role of a facilitator, learner at this point in time and then assess and challenge her understanding further. Further provision of opportunities for her to describe the ‘deep’ changes that she experienced by her providing in-depth reflections on her actions, feelings and beliefs were necessary. Bernice’s reflections were mainly concerned with designing a learning task. This could possibly be because she only really felt challenged by this intervention.

4.7.1.2. Carol

Carol was aware of whom she is as a person. She became aware that you have to challenge a person if you want to maximize his/her potential.

Carol needed to work on the overwhelming skeptical feelings that she had about the new knowledge, including the inside out paradigm. She will have to do it herself in order for her to believe that it works and then she will develop a “belief initiated mental model” (de Kock & Slabbert, 2004, p. 21). Carol needed more time and experiences to think about what she needed to learn and to develop the skill of writing reflections that required deep analysis or meta-learning aspects. Carol also thought that she needed to develop her understanding of a learning task further and her understanding and skill of how to construct a concept map. This personal awareness was essential for her construction of “phronesis”.

4.7.1.3. Mack

Mack was aware that his challenge was to maximise students’ potential. He understood that education is about the construction of meaningful knowledge by the student and that the teacher is a facilitator. He also understood that students’ learning involved both meta-learning and co-operative learning. A critical aspect is that he understood who he is as a person. He also understood what and how he needed to change in order for him to be a facilitator of learning.

Mack needed to be provided with further experiences for him to develop, modify and elicit his understanding of education, the role of a facilitator and a learner at this point in time. This should then be assessed and his understanding should be further challenged. He should describe the changes that he experienced and reflect on what promoted these changes. He needs to experience constructing ideas for teaching in order to develop his self-confidence.

4.7.2. What feeds into the next cycle?

I have described the plan of action that was to take place in the second action research cycle in this section. To be a Life Sciences facilitator of learning the student teachers needed to be provided with experiences for them to construct their knowledge about the nature and facilitation of Life Sciences and also the contents of the Life Sciences policy document. Each student teacher also needed to explore his/her perception of his/her role as a Life Sciences facilitator of learning.

Descriptive data – cycle two

5.2. Step 1: Experiential reflections

During a semi-structured interview each student teacher was asked to share their reasons why they decided to become Life Sciences student teachers and to draw how each saw himself/herself as a Life Sciences facilitator of learning. The student teacher's reasons were audio-recorded and transcribed. The transcriptions were electronically captured, the content analysed and presented as short stories for each of the student teachers below. The student teachers were asked to draw to elicit their perceptions of a facilitator of learning. This was done as the beliefs that the student teachers have about their role as facilitators of learning will influence their perceptions and judgments, which in turn, will affect their behaviour in the classroom. This view is evident in the literature by Peterson, Fennema, Carpenter & Loef (1989; Pajares, 1992). After the student teachers drew their representations I asked them to interpret the images drawn and the text written in their drawings. These responses were audio-recorded and transcribed. The content for each of the student teacher's responses were analysed and coded according to the features that were present in the drawings. These analyses are presented below.

5.2.1. Bernice

5.2.1.1. *Why teaching and learning Life Sciences?*

Bernice's decision to teach was influenced by the fact that she came from a family of teachers, had an amazing lecturer, taught horse riding and was interested in the medical world. Her "grandfather was a professor of Mathematics and my mom went into the Mathematics world." She completed a B Sc with three majors – Genetics, Psychology and Physiology. Her physiology lecturer expected her to think. Bernice explains "She did not answer any questions that we asked. She expected us to think about the questions and to answer them ourselves." She further explained "The kind of work she explained to us ...made me excited to go into teaching." Bernice also shared that when teaching horse riding she realized that "the small kids are fun". She indicated her interest in the medical world by "I absolutely love the medical world; there is no other subject that I would think of going into. She concluded by saying "the idea of working with children in the way that you can express your subject but you can also make a difference in childrens' lives - so the area to go into was teaching for me'.

Bernice's past experiences influenced her decision to teach. She was aware that a facilitator of learning and learners had particular roles to play in facilitating learning.

5.2.1.2. Perception of her role as a facilitator of learning (visual data –drawing).

Bernice's perception of her role as a facilitator of learning is represented in the drawing and the text interpretations. Bernice's drawing of her perception of the role a facilitator of learning and the role of a learner is presented on page 172. Bernice's interpretation of the symbols that she used in the drawing and her perception of the role of a facilitator of learning and learners is presented from pages 171 to 173.

a. Bernice's interpretation of the symbols that she used in the drawing is presented below:

i) Guy blowing up the lab

Bernice saw this person as one of the learners that you say to her "just try it again or try it until you get it right." Bernice also viewed this as representing the learners having fun. .

ii) Text – wow, is it, geeh

Bernice used these words to show that "the class is actually amazed. They are not sitting looking out the window or something; they are amazed at what their friend is doing." She explained that the children sitting and watching "would want to go up front and try it themselves."

iii) Smile on the learner's face

Bernice indicated that the learner was having fun "even though he has blown up his hair or whatever".

iv) The use of the thermometer

She explained that the thermometer "is going crazy. The whole experiment is being a flop". But she stated that "he has learnt all that."

v) Position of facilitator in relation to learners

Bernice explained that she put herself on the side as she was "observing the learner demonstration with the other learners.

b. Role of a facilitator of learning

She saw herself as "walking through the class and watching them as they try things out [and] assessing what they are doing" and monitoring time. She thought that a facilitator of learning should not say that something is wrong as this "could suppress their [learners'] confidence." What should be said is "no it's

fine, but just try it again or try until you get it right.” She concluded by stating that “I am all for practical work, so they are doing the hands on experiment. The question to ask is why would they want to learn this, why would they want to do this experiment.

c. Role of learners

They are doing this experiment, they are learning. Bernice stated that she wanted the children in her class to “learn through experimentation - not just with test-tube experimentation but even in their theory.” The reasons that she gave for this were that “learners are afraid of the whole, afraid of exploring and afraid of practical work ... [and] Biology is a practical thing.” She wanted the learners to have “fun [while experimenting and] to have confidence, to try things, to try new things, because when you have confidence to try things, then you also have confidence to pose questions to yourself and also to your facilitator of learning.”

5.2.2. Carol

5.2.2.1. *Why teaching and learning Life Sciences?*

Carol’s decision to teach was influenced by a childhood wish, wanting to work with people and an amazing teaching experience. Carol stated that “as a little girl teaching was there ... I always thought I would not mind becoming a teacher and I thought that I would enjoy it” even though it wasn’t her first choice while growing up. Carol shared her amazing experience “I started working at Saturday school and this is where I started to think I can do this for life and this is where my passion started for teaching.” She stated that “the Saturday school was the ‘spuit op die kop’ (the nail on the head) – that was it for me.” Carol shared her feelings about teaching at the Saturday school as “skeptical in the beginning ... [and] it was frustrating but I loved it.” This experience revealed to her that she “was a patient person” and she could teach. She was concerned though that “something was missing. I was unsure of many things. I had no formal training in the education field and I realized that I needed help.” She concluded that “the enrichment that you get out of teaching was very fulfilling and it makes you bubble inside. It is great to see those children and to see that you make a difference.”

5.2.2.2. *Perception of her role as a facilitator of learning (visual data –drawing).*

Carol's perception of her role as a facilitator of learning is represented in the drawing and the text interpretations. Carol's drawing of her perception of the role a facilitator of learning and the role of a learner is presented on page 175. Carol's interpretation of the symbols that she used in the drawing and her perception of the role of a facilitator of learning and learners.

a. Carol's interpretation of the symbols that she used in the drawing is presented below:

i) Eyes

Carol stated that eyes described her in that she “wanted to be alert to her students, their needs; changes in the curriculum and to new things that are happening.”

ii) Mouth and the word friendly written on the mouth

Carol thought that she would get “more out of the children by being not their friend but by being friendly.” She stated “the shape of the mouth is a friendly smile’.

iii) An instrument

Carol stated that she saw the “textbook as an instrument and it must be used by the learners.”

iv) > FOL

Carol stated that she wanted to be “more than a facilitator.” In that she did not want to give them “just the content I want to prepare them for life.” She also wanted them to “trust me enough to feel secure enough with me so that they can come to me with any problem not just the academic side”.

b. Role of a facilitator of learning

Carol described herself as a friendly and alert person who provided fun but was “a stable factor in the classroom”. She also saw herself as providing “motivational aspects for the learners, being a positive influence, encouraging and someone that they could confide in.” She did say though that she was “especially serious about the learning, making sure that they understand and that they have what they need.”

c. Role of learners

Carol viewed her learners as individuals who would be “serious about learning and fun would be an important element of this learning.”

5.2.3. Mack

5.2.3.1. *Why teaching and learning Life Sciences?*

Mack’s decision to teach was influenced by his interest in teaching and his passion for nature. Mack stated that he had “always been interested in teaching people things. This started off at church where I have led youth groups for a long time.” He shared that he had tried one year of a B Sc degree but left when he realized that he was not heading anywhere. His interest was in teaching but he was concerned about the salary – insufficient to raise a family. This made him hesitant to teach. Mack also stated that he had grown up on a farm and has “always enjoyed nature – have a great passion to conserve it”. Mack concluded that “Children hold nature’s future in their hands ... I can help them to see the beauty of nature. The only way to teach my students about the enjoyment of nature was through Biology/Life Sciences.

5.2.3.2. *Perception of his role as a facilitator of learning (visual data –drawing).*

Mack’s perception of his role as a facilitator of learning is represented in the drawing and the text interpretations. Mack’s drawing of his perception of the role a facilitator of learning and the role of a learner is presented on page 178. Carol’s interpretation of the symbols that she used in the drawing and her perception of the role of a facilitator of learning and learners is presented from pages 179 to 180.

The following is Mack’s drawing of his perception of the role a facilitator of learning and the role of a learner:

a. Mack’s interpretation of the symbols that he used in the drawing is presented below:

i) Lines of different colour

Mack used different coloured lines to represent truth. A blue line represented “the truth that is transcribed directly”. A purple line as the truth and the orange line as “the truth that is distorted”. He interpreted the

continuous line as “the one which carries on, the learner as I see it can both obtain knowledge and experience from this body [of knowledge].”

ii) The eye

Mack used the eye to symbolize the learner. The reason he gave for this was that “I think cause that is what symbolically you want to do, to open their eyes to the world around them. Through the questioning and through giving them a problem, placing a problem in front of them, this gets the learners to question.” He represented this questioning action of the learner by a question mark

iii) The tree

It represents the truth that is present in the world. He stated that the natural world includes everything natural, which has to be truth.”

iv) Position of facilitator

I position myself between the knowledge and the learners. I will give the learners a problem. He located himself in the in the top corner in the drawing “me as a facilitator which is there.”

b. Role of a facilitator of learning

Mack viewed himself as a facilitator whose role was to check and correct the “knowledge that learners have as I do not want them getting incorrect truth.” He also viewed it as “crucial in the learning process in that he had to establish inquiring minds in learners and make them realise that what they believe in, is not the truth.” He stated “You as a facilitator intend or try to get them to answer the questions, therefore they have to observe things and in doing this they have to acquire things in order to solve problems.” He also stated that to get the learners to start thinking about something “they need someone who can encourage them when they are on the right track or when they are establishing the truth coming out and question them if you see something wrong”

c. Role of learners

Learners can experience the world by using their senses to answer questions that they have or to solve the problem given to them by the facilitator of learning. In order to do this, the learners have to acquire knowledge.

5.3. Step 2. Reflecting and interpreting

- What was my role in the session and why did I have this role?

I together with the student teachers planned the questions for the semi-structured interview. I designed the questions for the visual data section.

- What underlying assumptions did the researcher have for asking each student teacher to draw how each saw himself/herself as a facilitator of learning?

I assumed that after each student teacher had drawn and interpreted his/her drawing each would start to challenge his/her perception of how each saw the role of a facilitator of learning. Each student teacher would now be aware of his/her deep understandings and insight of a facilitator of learning. If they are aware of this, then they will be open to constructing the appropriate perceptions. Also by eliciting these perceptions each student teacher could challenge and review his/her identity as a facilitator of learning. These identities are evident from their stories of how they came to decide to teach and the interpretations of their drawings.

- What was the student teachers' participation in the session and could this be done differently?

Each student teacher freely drew the image, shared his/her interpretations and enjoyed sharing and learning from the drawing experience. They thought that the session was well structured and should not be organised differently.

- What was each student teacher's identity as a facilitator of learning?

Bernice saw herself as a person who will provide the learners with a fun learning context and the confidence and encouragement that they require.

Carol saw herself as friendly, alert and a stable factor in the school life experience of the learners. She saw her role as including motivational aspects for the learners – a positive influence and encouraging.

Mack saw himself as the person with the truth who wants to encourage the learners to achieve the truth.

- What does each student teacher understand about his/her role as a Life Sciences facilitator of learning, the role of learners in the learning process, and what informed their description of the particular roles?

Bernice saw the learning context taking place in the school laboratory. Bernice, as a facilitator is not a central figure in the facilitation process as she is standing on the side observing the learner demonstration. She stated that a facilitator should support the learners by being present and encouraging them, even if they feel like saying and thinking “it is wrong”. She would say “no it is fine but try it again.” She saw this as developing the learners’ confidence and a learner could view it as either motivating or being given a message that is misleading – positive but negative at the same time. In this learning process, the important aspect of learners developing trust for the facilitator is taken into account. Initially Bernice stated that “I thought that it would be me doing the experiment” (comment about the main person in the picture) and then she changed the statement and said that it was a learner doing the experiment. The internal conflict that Bernice experienced was an indication that she was going through a change process in her thinking about the role of a facilitator. She was also establishing reasons/underlying assumptions about her role as a facilitator and how children learn.

The aspect of peer influence in learning was directly worked with when she said “Learners should have fun and be amazed by the activity (demonstration) that is done in the class by a peer so that they can pay attention and be motivated to also do the activity”. Also, the importance of learners doing the work themselves was realised in her saying “learners learn by trial and error, by the fact that they should be given opportunities to perfect what they are doing by repeating the activities.” This view of learning by doing was enhanced by her own experience in school when she “sat for afternoon after afternoon memorizing the pink one goes blue ... you do not have to go and learn it – you don’t have to go and poppegaai³ the whole thing, you know it and it makes sense to you”. Bernice also thought that learners should participate by asking questions of themselves and of the facilitator of learning. She felt strongly that a relaxed atmosphere should be provided in the classroom by the facilitator of learning. She also felt strongly that learner’s self-attributes should be developed and used to enhance their learning.

³ Poppegaai is an Afrikaans colloquial word meaning stupid. Bernice uses it in the sense of memorizing.

Bernice saw Biology as a theoretical and a practical component as this is how she experienced it at school.

Carol saw herself as more than a facilitator of learning who provides fun for the children but is also serious about them learning and understanding their work. She is also aware of the children's needs. Carol saw learning and understanding as essential for the development of children and that understanding is a part of learning. She wanted to provide Biology content and life skills for the learners so that they could deal with "problems that they experience". I attributed this thinking to the fact that Carol has a Psychology background (Psychology Honours) and that her care and feeling for children was intense. It went beyond that of a teaching and learning relationship. She was also aware of the importance of a relaxed classroom environment where her relationship with the learners was a central issue to her in that she stated that she must be friendly. She saw herself as knowing a little bit more than the learners in terms of knowledge but that was not all that facilitators of learning should be. Carol also saw her role as a facilitator of learning in a broad educational sense with regard to her developing her knowledge about the curriculum and curriculum change. The play of words that she used – can and not must, illustrate her awareness of the social aspects of a facilitator of learning and the power relationship between 'teachers' and learners. She does not want to be seen as having all the power in this facilitator of learning - learner relationship. This thinking lends itself to the behaviour necessary for an effective facilitator of learning.

Carol stated that learners can do things for themselves and they can access resources e.g. facilitator of learning and textbooks, and that learners should be given responsibility for their learning. This thinking is in line with constructivist theory of teaching and learning where the learners play a central role in their own learning process but here it is not that the learners can take responsibility, they are given it, and therefore it is an external and not an internal action/influence.

Mack viewed the world as being natural and learners learn about the world through their experiences and "acquire a body of human knowledge in interaction with the facilitator." This implies that learners at times actively participate in the classroom. He also stated that "learners are acquirers of knowledge and they can discover it themselves or get it from the facilitator." Further evidence that learners are receivers of knowledge can be seen in the uni-directional arrows that are drawn from the knowledge to the learner.

Mack is taken up with the truth of the world issue. This could be linked to his Christian belief where telling and knowing the truth is important. Ontologically and epistemologically, this understanding of truth can be linked to his expose of who he is (cycle one). The first statement that he made was “I am a Christian and therefore I follow the Christian beliefs, doctrines and modes of worship. There are a number of things that make me enjoy life to the fullest. The first and most important is my belief.” He does however acknowledge that there is a possibility of falsehood. This is where a teacher can correct these false beliefs. Mack stated that “you realise that you can question learners about their falsity (the incorrect and the misconceptions that they have). Mack is aware of the importance of working with learners’ misconceptions due to his strong focus on truth and experience (see cycle one) with his own misconception of OBE and group work. The use of a questioning strategy in facilitating learning is necessary for learners to realise for themselves that what they believe in is inappropriate, but more importantly as a result of this, the learners will come up with a correct view. This is based on the constructivist principles of teaching and learning. These principles are partially adopted where learners are given a problem, but they have to acquire things in order to solve the problems. Here the role of the learner in solving the problem is not clear as the process of how they acquire things is not stated.

Mack has a conflicting perception of the role of a learner. He is not certain about what their roles are as there is evidence that his perception wavers from learners as acquirers of knowledge and as learners realise for themselves and come up with a correct view.

Mack developed this knowledge from his personal position as a Christian believer and his experiences of the programme when he was exposed to - what is the aim of education and what is a learner really at Hammanskraal.

- What underlying assumptions did the student teachers have about their role as a facilitator of learning?

Bernice thought that children learn by doing, carrying out experiments and that experimentation has a practical and theoretical component.

Carol wanted to support learners emotionally and provide them with a relaxed environment where they could learn.

Mack thought that learners required truth in the world and he was going to provide them with the truth which will come from their experiences in nature.

- What words linked to education did the student teachers use, what was their understanding of them and why did they use them?

Bernice - Kids, pupils, students and learners whatever they are. Initially, Bernice used these terms interchangeably and then she later used the term learner more often.

Facilitator – observes learners and motivates them and is not the central figure in the learning process.

Learning – is an activity that learners carry out by doing an activity. The activity is for the children to learn through experimentation, not just with test tube experimentation even in their theory.

Biology – a practical thing, it is out there.

Carol - Children/learner – can do things themselves and they should be given responsibility.

Facilitator/teacher – a facilitator prepares the children for life and does not give them just the content.

She wants to be more than a facilitator.

Learning – is an activity that students carry out and it leads to them understanding.

Mack - Mack uses the term problem in two senses – where the facilitator has a difficulty with the learners; learners should be given a problem but they have to acquire things in order to solve the problems.

- If you were asked to draw what you did in step 1 (how you saw yourself as a Life Sciences facilitators of learning) right at the beginning of the year would you have drawn what you had drawn?

Bernice stated that her drawing would have been different as she would have been the person in the front demonstrating.

Carol stated that the drawing would have been different as she would not have

brought in the process thing, with the eyes observing. She stated “I would not have indicated that I as a facilitator had to give the learners the responsibility and that they must take the responsibility and do the learning. “

Mack stated that he probably would not have drawn what he did. He did state that the programme had changed his view of a facilitator and he was still trying to work it out.

- What feelings did the student teachers express at this point in time in the programme?

Bernice felt happy doing the programme

Carol enjoyed what she was doing “but it was difficult to grasp the new things about facilitating learning and the paradigm shift in education at first”. This was totally different from what she was used to (experienced) in school and at university. She felt uncertain, but she knew that in time she would learn, understand and experience more. She stated that there were frustrating moments and sometimes she wanted to scream, but most of the times she felt pretty good.

Mack felt good because he had done quite a lot of thinking about himself. Also being a guy it was a good bonding experience. He stated “I sort of felt quite haphazard at times and felt really quite lost but I really enjoyed myself.

- Community of discussion - communication patterns - this was not expressed during this session as the student teachers worked individually. In the individual sessions what the students shared was:

Bernice stated that sharing her story was a nice experience. She stated that now I could understand where she was coming from and I could understand her better.

Carol stated that she felt a bit intimidated as she did not know what I expected of her. She questioned me as to whether she was saying the right thing as she wanted to be right. Carol felt challenged by the drawing as she struggled to think up things to represent it outwards for it to be seen. She stated “I am not a creative person”, and anything like this was quite a challenge for her, difficult for her to do. She did mention that it was “more fun this way”, even though she felt more secure with writing. She stated that she would probably have shared more about her role as a facilitator if she had written it out as she have felt more secure with the writing.

Mack stated that he felt good about sharing his story as what he saw in it was his passion for teaching and passion for really helping other people.

5.4. Step 3: Planning Action

The specialisation lecturer planned the action. This step was concerned with planning for the elicitation and exploration of the student teacher's interpretation and perception of the Nature and Structure of Life Sciences and the South African schools implementation policy for Life Sciences (Grades 10 – 12). The specialisation lecturer gave each student teacher three readings – Biology Teaching – an information manual by Schwab; Natural Science and Technology Booklet and the National Curriculum Statement - Life Sciences Policy document. The first two readings focused on the structure and nature of Biology and the last one on the policy implementation, principles, outcomes, content areas and assessment of Life Sciences in South African schools in grades 10-12. The students were given a few days to read and interpret the content in these documents with a view to constructing their knowledge about these particular aspects of Life Sciences.

5.5. Step 4: Taking Action

5.5.1. Bernice

5.5.1.1. Nature and structure of Biology

Bernice stated, “There is a difference between Biology teaching and the Biology that we did at school.” She was aware that Biology as a discipline had particular characteristics and could be distinguished into theory and practical components.

5.5.1.2. Facilitating Biology – role of facilitator of learning

Bernice stated that as a facilitator of learning we need to ask “what is the Biology that we need to teach to make them (the learners) aware of it.” She expressed that “if you have the nature and structure of Biology then as a facilitator of learning it gives you the platform from which you can work things out”. She concluded that “this makes the teaching of Biology more understandable.”

5.5.1.3. Developing learner attitudes and the link to science process skills

Bernice stated that children can develop respect for things in nature if they get to know it.

5.5.1.4. Exploring the link between science process skills and knowledge development

Bernice was of the view that in learning Biology “you come across it you realise it and you experience it.” She stated that for learners to establish what something is “they need to feel it, touch it”. Bernice thought that process skills were important as children could find the truth in some experiments using all their senses.

5.5.1.5. Learners and learning Biology

Bernice was of the view that learners should take responsibility for their own learning. She stated that she “would throw them in the situation so that they realise that they need a wake up call”. She shared her ideas “if I give learners activities to do and they do not want to respond to requirements then I will show them that they needed to do it.”

5.5.1.6. Relationship with learners

Bernice stated that when you have authority placed on your shoulders and you show learners that you are serious then “they will respect you.”

5.5.1.7. Understanding of facilitating learning

Bernice stated that when facilitating learning a facilitator should ask a learner, “is this the best way that you can do this”, so as to get the learners to discover another way.

5.5.1.8. Exploring the content areas of Life Sciences - Indigenous Knowledge

Bernice thought that indigenous knowledge was related to the Life Sciences by the fact that some indigenous plants were used to cure ailments. Her understanding of indigenous knowledge was that it was about “Bushmen as they had ways of doing things that were basically thought out by them.”

5.5.2. Carol

5.5.2.1. *Nature and structure of Biology*

Carol stated that the Science subject, Biology must relate to the Biology discipline in that “they were the same.” She was aware that the nature and structure of Biology was changing all the time. According to Carol, “in learning Life Sciences there are practical and theory parts that must be worked with. Carol had the view that a fact is acquired through learning. According to her, “through practicals you learn theory and there is substantive knowledge that will not change for example, these are my lungs” as this is a fact.

5.5.2.2. *Facilitating Biology – role of facilitator of learning*

Carol held the view that in order for learners to develop facts they would “need to be busy with practicals each period and this could be impossible in a schooling system.” She stated that these are demands that she will have to work on.

5.5.2.3. *Developing learner attitudes and the link to science process skills*

She was aware that learners “observed through their senses [and] they needed to use cognitive skills.” She held the view that if two people view an object the one person will be more correct in describing the object because two people perceive it differently.

5.5.2.4. *Exploring the link between science process skills and knowledge development*

Carol stated, “the essence of science was observation”. She supported this by saying “learners need drawing skills to draw in Life Sciences and for them to construct meaning they needed to observe and give their meaning. She was aware that if she did this the learners would develop knowledge and process skills.

5.5.2.5. *Learners and learning Biology*

Carol stated that as a facilitator she needed learners to develop better syntactical structure (developing process skills). She could do this by asking “the question of how can learners’ thinking skills be developed?” She knew that if she wanted learners to take responsibility for their own learning she still

had to ensure that learning took place. And she could use assessment to see if they had reached the outcomes.

5.5.2.6. Relationship with learners

Carol stated that “as I have the authority placed on my shoulders learners will start respecting me if I respect them.”

5.5.2.7. Exploring the meaning of mediator of learning and facilitator of learning

Carol stated that based on the specialisation lecturers’ response on the meaning of a mediator, she understood it to be a person who mediates learning from whatever you wish to whatever you wish. Carol understood the meaning of a facilitator of learning to include the construction of meaning and maximizing the potential of learners by challenging them with a real life problem.

5.5.2.8. Exploring the content areas of Life Sciences – Indigenous Knowledge

Carol’s understanding of indigenous knowledge was about indigenous people like “the Tswana people and like the lobola thing.” She also stated, “the Bushmen carried out their indigenous practices of tracking animals”.

5.5.3. Mack

5.5.3.1. Nature and structure of Biology

Mack stated, “There is a difference between Biology teaching and the Biology that we did at school”. Mack was aware that the nature of Biology is such that it was changing, but “a child must be taught facts”. He thought that children obtain knowledge via/through process skills.

5.5.3.2. Facilitating Biology – role of the facilitator of learning

Mack, as a facilitator of learning, believed that to get learners to learn Biology he would have to establish (develop) their process skills in order for them to obtain facts. Furthermore he believed that for learners to learn Life Sciences they needed to be taught respect for nature.

5.5.3.3. Development of learner attitudes and the link to science process skills

Mack stated that you cannot tell children “to respect nature if they do not know anything about the object (nature).” He said, “children come to have respect for things that they can see”. According to him they “can see if they take the magnifying glass and have an aha experience, not through me telling them - they need to experience it.”

5.5.3.4. Exploring the link between science process skills and knowledge development

Mack stated, “when you observe through the senses you need to use cognitive skills”. He was aware that in learning Life Sciences learners must be able to apply the theory. His view was that “when learners construct meaning they can do whatever they can, they can create new things to use in new situations.” He concluded that if learners used process skills to construct knowledge, then they could use the knowledge however they wanted.

5.5.3.5. Learners and learning Biology

Carol stated that “as I have the authority placed on my shoulders learners will start respecting me if I respect them.”

5.5.3.6. Relationship with learners

Mack stated that when you have authority placed on your shoulders learners will start respecting you if you are being professional.

5.5.3.7. The kind of teacher/facilitator

Mack stated that as teachers “we need to keep up with the trends in Science of what is currently going on”. He thought that teachers should teach more than just facts and these do not only have to come from a teacher. Mack when talking about the policy document stated, “the term teacher is used but the role described is that of a facilitator.” He distinguished “a mediator [is a person] that directs learning, a facilitator of learning is that s/he is engaged with construction of meaning and to maximize the potential of the learners.”

5.5.3.8. Policy document - exploring the content areas of Life Sciences - Indigenous Knowledge

Mack understood that the Bushmen were indigenous people of South Africa and that everything that they did had to be sustainable. Mack was aware of current practices of a sustainable activity. At a number of game reserves indigenous practices was the basis of sustainable partnerships.

5.6. Step 5: Reflections on taking action and interpreting

5.6.1. Bernice

- Now I understand it, the difference between syntactical and substantive, but I want to be able to take the document home and read it to highlight the sections that I did not understand.

How did Bernice develop an understanding of syntactical and substantive?

Bernice experienced the questions and statements that the specialisation lecturer made. She participated in the session by responding to questions asked. She listened to the responses given by her colleagues. The importance of social learning was realised in these particular sessions

- I am happy and I am not concerned about anything, nothing is bothering me.

Why did Bernice express these feelings?

Bernice had the experience of a lecturer in one of her undergraduate courses, who expected her to think about the questions and to answer them herself. Bernice by nature is a relaxed person who takes things calmly and she was enjoying the experience of the programme and she felt happy.

- The work that we are doing is interesting. It is not really the idea that I had. I had a different experience at school. We never did any practical at school or work in the laboratory. No practical work really. We were just fed information from the textbook.

Why did Bernice say that it is not really the idea I had?

Bernice's schooling experience was such that she learnt Biology in the transmission style where content from the textbook was the primary focus. Her experience of learning Biology at school and her observation of Biology teaching at the school impacted on her beliefs about how she was going to teach

Biology. The perceptual and cognitive knowledge that she constructed during the university sessions about the approach to teaching and learning Life Sciences (Biology) was a new and different experience for her. The idea that you teach the way you were taught (Hargreaves, 1994) could have impacted on her original thinking about how to teach Biology.

- When I reflect on my drawing of me as a facilitator of learning I think I would leave mine pretty much the same because I was drawing a laboratory situation, which is what we discussed in the last session.

Why did Bernice say that she would leave her drawing pretty much the same?

Bernice was aware that children need to use process skills, “feel it, touch it”, for them to construct knowledge. The setting in her drawing was a laboratory where the learners used process skills of observing and communicating and only one learner was demonstrating an experiment. She may have been aware of the importance for learners to use process skills but the level of this engagement and extensive use needed to be developed further as, in her drawing, only one learner conducted an experiment. Also, aspects of social learning were not present.

- When we are discussing I know that I can ask Professor (specialisation lecturer) something. So, yes I did know that I can ask questions.

Why did Bernice make these reflections about the discussion sessions?

The specialisation lecturer (Professor Ned) at the beginning of the session always asked the student teachers if they had any questions to ask and if they were feeling comfortable. This was important to relax the student teachers. Even though the student teachers were aware that they could ask questions Bernice knew that she would not get a response to their questions. Professor Ned did tell them that “I will answer a question if it is appropriate to do so and the right time to do it.” He wanted the student teachers to think about the questions they asked and to respond to their own questions. At one point during the discussions the specialisation lecturer (Professor Ned) stopped Bernice from asking a question by stating, “already done.” Bernice was not happy with this incident and she had the confidence to raise it, discuss it and confront him with it. This indicated that she felt comfortable with the setting and the

initial power relationship between Professor Ned and the student teachers evident in the first cycle during these discussion sessions was now more relaxed.

- I do not know if it is wrong not to answer a question. I am used to, I do not know if it is the way we were educated or whatever but I am used to sort of you send your mind in a certain direction knowing that there will be someone to say no that is not so to the answer that you give.

What explains why Bernice had this thinking?

Bernice was evaluating how her learning in the past was influenced by the way her questions were answered. She shared her personal experience of how she felt and thought when her response to a question was either approved or rejected by a teacher. She strongly felt that “the assurance that a learner gets for her response is comforting as she is not left in a state of turmoil and confusion.” This assurance is at the expense of the learners taking risks to learn in new ways. Bernice, though is comfortable with externally and not internally motivated actions as the “learner is not left in a state of turmoil where he/she has to figure out whether the response is appropriate or not.”

- When I look at what reflections are, it is writing down what you have learnt. I sometimes add something really important that I have learnt also into my reflections, like an important fact. I add it in before I forget it. The other day in class Professor was saying stuff that was not in the notes. He was saying stuff that was really interesting, that I wanted to remember, so I added it to my reflection.

From my reflections you can see from what I knew up to what I know now.

How and **why** did Bernice come to understand reflections in this way?

Bernice was still in the process of developing an understanding of what reflections are and also the skill of reflecting. Her understanding of reflections was simple in that it was concerned with her writing what she had learnt. Her reflections were at an academic level and not a personal level. Bernice’s reflections could be used to assess her progress even though they only focused on the content cognitive knowledge that she had learnt.

- Relationship between school and university - I feel responsible and will have to keep from trampling on peoples’ toes.

Why did Bernice state this?

Bernice wanted to carry out her role as a facilitator in a manner that was free from any conflict situations with staff at the school.

5.6.2. Carol

I would feel more free to communicate if this was just a chat session.

He just wants to ask questions, questions.

Why did Carol express this?

Carol was not comfortable with Professor Ned asking questions even though he did this to challenge and prompt them (student teachers) to respond. This discomfort could be due to, as stated earlier in cycle one step 5, that Carol is a good listener and not a talker.

- In terms of knowledge development we started with the basics. We have not done Life Sciences really but just the syntactical and substantive structures. So jah, I think that is a good beginning for us to understand that it (Life Sciences) is one thing not separate. It is very nice. We learnt a lot.

How did Carol develop an understanding of syntactical and substantive?

She participated in the session by responding to questions asked even though she did not feel comfortable with been asked a number of questions. As Carol thought that the specialisation lecturer was going to teach them (student teachers) how to teach Biology (cycle 1, step 1), this is still reflected in “we have not done Biology really”. This indicates that it is important to elicit and discuss the expectations that the student teachers have for the programme. This thinking is described in the literature by Kagan (1992). Carol was exposed to new knowledge about the structure and nature of Biology. Her feeling expressed above indicated that she felt good about learning this new knowledge.

- The idea that the content was the most important and now we know the principles. ⁴Maak my deurmekaar. I am very confused because I had the idea that the content was important now the

⁴Makes me confused

science processes are. Now you have to rethink what you are going to do in the classroom – that is the whole paradigm thing.

Why did Carol have these experiences?

Carol was experiencing a personal challenge and change in her thinking about facilitating learning in Life Science. Even though she felt good about learning the new knowledge on the nature and structure of Biology she also felt very confused with it. She was expressing problems with processing this knowledge as it was too different from what she had experienced in her past experiences of being taught.

This links to (Pajares, 1992)

- When I reflect on my drawing of me as a facilitator of learning I think that I would keep some of the things the same but I would bring the process thing in because I did not do that at all but just had some technology. I am not sure how I will represent it – had the eyes in there so I will just bring that into the observing – because observing is the most important syntactical (process) activity.

Why did Carol say that she would keep some of the things but bring in the process thing?

When analyzing her drawing of a facilitator of learning Carol stated, “I know with what we learnt now is that you mustn’t like give them the textbook; you have to let them do it themselves.” Even though an eye was drawn in her drawing it represented her action as a facilitator not the action of the learners. Carol now understood that learning Biology entailed the use of both process skills and content development but she was experiencing inner turmoil with this new knowledge.

- I think that the whole thing on reflection is kind of what you did and what you learnt about it, how you feel about it. Jah that is what I understand about it. Reflection - can you see yourself in what you have written? In the feeling thing you can see yourself but not the fact that I have learnt this...not the fact. So we can say if we were bored.

How and **why** did Carol come to understand reflections in this way?

Carol understood and had the experience of writing personal reflections about the feelings that she experienced not just the knowledge that she had gained. She also understood reflections to be used as an

indicator of “who you are as a person.” But, in reflecting she was also sensitive that she should not offend anyone with what she wrote. She was therefore surprised that she could be absolutely open and honest with what she wrote or stated in her reflections.

- With the relationship between the school and the university being such a sensitive one, I feel scared of screwing up. If I screw up then they will say you are not coming here again. It makes me kind of nervous.

Why did Carol state this?

Carol was aware that the relationship between the school and the university was a sensitive one. She wanted to carry out her role as a facilitator in a proper manner as she did not want negative feedback from the school. The basis of Carol’s feeling of inadequacy stems from if she would know the stuff that she needed to teach at the school. This experience of learning about the syntactical and substantive aspects of Biology further challenged her beliefs about teaching and her understanding of what she was capable of.

5.6.3. Mack

- At first I felt confused by the meaning of the actual words (syntactical and substantive) because they are quite similar. The discussion brought some good understanding in some parts especially with regard to the meaning of syntactical and substantive and the relationship between them.

How did Mack develop an understanding of syntactical and substantive?

During the discussion the specialisation lecturer asked a number of questions that the student teachers had to think about. Some questions asked were: What do they say in the syntactical structure - about basic competencies? Could you observe without syntactical structure? He also made statements like: Substantive nature is changing through the syntactical and the syntactical structure does not change. Mack developed a good understanding of syntactical and substantive. He had prepared for the sessions - he had read the documents provided. As a result he could respond to the questions and in the process

construct appropriate understanding. But it was not just in reading the document that enabled this understanding, it was his active participation in the session that was of intense importance.

- I feel that some of the questions were quite tough

Why did Mack make this statement?

Even though Mack stated that he had a good understanding of the nature and structure of Biology he felt that the questions were difficult. The reason for this is that Mack's original perception about the structure and teaching of Biology was being challenged.

- It has been nice, we have learnt a lot about the theory behind the Life Sciences, things to use directly in the classroom, it will help us in our practice, what we are teaching, the nature of it and I am keen to get down to it. How are we going to go about it?

Why does Mack exhibit a mixed emotional stance?

Mack was in the process of experiencing change in his beliefs about teaching Biology. He was aware that the discussion about what could be used in the classroom could influence his practice. But, he was anxious about the actual action of teaching i.e. how will he teach in the classroom. This is a clear indication that the technical – rationality approach (Schon, 1983) was not used to inform his practice. Furthermore, he was asking questions not about what to teach but about how he was going to teach. This was his challenge. He had not facilitated learning Biology in the classroom as he had not done this as yet.

- When I reflect on my drawing of me as a facilitator of learning, I think mine is, like I have a lot of lines going everywhere on my paper and there is no connection between the knowledge of the student and if I had to change it I could just add more quality to it. I would add in the whole process of the Life Sciences and how the students go about constructing the knowledge for themselves.

Why did Mack say that he would make changes to his drawing?

Mack was in the process of constructing knowledge about the nature and structure of Biology. He has experienced a change in his belief that learning Life Sciences focuses on knowledge only. He was aware of the link between process skills and the development of knowledge, and that when learners construct meaning they can create new things and also use this knowledge in new situations.

- When I look at what reflections are, it is going over all the important things that you think has been discussed and how you sort of assimilate that in your own life. I think I am doing it because you (the specialisation lecturer) said we should do it but I definitely think there is value in it. After doing it, I really realise it is actually thinking deeply about what we had done in the session and yes, it has really made it clearer.

How and **why** did Mack come to understand reflections in this way?

Mack had the experience of reflecting when he was in Hammanskraal. His reflections then focused on important things that had happened to him and this is evident from the words that he used – the important thing that happened to me, the main fact that I learnt. At this stage the reflections were still about important things but they focused on what was reflected on, the process of reflecting and the value of reflection for his professional development. His awareness about the need for reflecting is being developed.

- I feel that I have definitely progressed over these sessions but I definitely do not know where we are going from here. I am wondering about the end point in terms of my progress.

Why has Mack expressed these feelings?

Mack felt uncertain as he was not given guidelines on how to teach and what type of teacher he was going to end up as. He felt uncertain as the process was one where the individual due to his/her own experiences constructed and used his/her practical wisdom to construct knowledge. There were no fixed guidelines and endpoints given to the student teachers. His development was linked to who he is as a person and his expectations of what will happen in the facilitating learning experience in the classroom. Mack as an individual lacked self-confidence, believing in himself and he needed to plan his work more.

This together with the brain profile result that he prefers the big picture, not the detail further impacted negatively on his feelings.

- I have been nervous about the relationship between the school and university and also that the teacher has to give 40% of her time, which is quite a lot and I am then responsible.

Why did Mack state this?

In preparing the student teachers for the schools the specialisation lecturer shared the preparation for the schools. The responsibility of being the facilitator of learning for this time period elicited fear in Mack.

5.7. Step 6: Evaluating Action

The evaluation stage focused on the analysis and evaluation of the intervention for this cycle and the issues that fed into the next cycle.

5.7.1. General comments - analysis and evaluation of the intervention

Each student teacher's experience of each step in the cycle was essential to their self-constructed practice theories. The construction of each practice theory entailed the dynamic exploration and challenge to their developing identities of a facilitator of learning both at a personal and professional level. This exploration and development was evident from the issues raised during this cycle and their responses to these issues. The issues focused on the nature and structure of Life Science (Biology); facilitating learning in Life Sciences with regard to her/his role of as a facilitator of learning, the role of science process skills in learning Life Science; the role of learners in learning Life Sciences, the type and importance of his/her relationship with learners and his/her perception of the role between the university and the school during the practicum period. Korthagen (2001c, p. 255) reminds us that these explorations of "student teachers' preconceptions about learning and teaching" are necessary if we want the student teachers to construct their own practice theories.

Bernice, Carol and Mack's experience of the action step challenged their current beliefs of facilitating learning and reflecting, their emotions, and their expectations of the professional development

programme. The importance of a Life Sciences facilitator of learning integrating process skills and content for learners to construct the appropriate knowledge was a new experience for all three student teachers. The old belief of the importance of content was definitely challenged. But, with this challenge came the question of how were they going to do this integration in the school as evidenced by Mack's question "How are we going to go about it? So, this new experience brought further concerns and challenges about what would be expected of them in their role as facilitators of learning.

They were aware that they had to focus and plan for the role of learners as active participants in the process of learning. This clearly is in line with the principles of experiential and authentic learning. This belief of a learner as active in learning was far removed from their own experiences of learning (Lombardi, 2007). This 'shaking' of beliefs further made the student teachers feel uncomfortable and in Carol's words "deurmekaar". The social learning was a concrete experience for these student teachers. But even with this experience their learning was a "messy process" (Abbot, 1999). But without this messiness and uncertainty authentic and experiential learning may not have been possible.

The messy nature of learning is also intertwined with emotions, reflections and expectations. We need to recognise and integrate the emotional, cognitive (Kolb & Fry, 1975) and perceptual experiences of the student teachers for them to learn. We also need to encourage student teachers to actively reflect on their experiences as awareness of their own learning (Korthagen, 2001b) was important for their construction of "phronesis" As student teachers were only told to reflect with no template or guide as to what to reflect on and how to structure their reflections they had to experience the process as a intensely personal one. This personal nature came from the depth of emotions and thoughts shared in these reflections. But, this process of reflecting does not take place automatically and it is for this reason that student teachers were asked to record their reflections and then to share them during the reflection sessions which were structured into the professional development programme. The elicitation of student teachers' expectations about aspects in the programme needs to be shared. In as much as Carol stated "we have not learnt any Biology yet" as she expected to be taught Biology in the programme. These expectations if left unattended could develop into concerns and these could impact on the process of learning. Negative

emotions are normally associated with concerns and these could impact negatively on the construction of “phronesis”.

Bernice, Carol and Mack were each constructing their own practice theories of facilitating learning. These theories were influenced by the nature of who they were as people. But the challenge to their current beliefs of facilitating learning and reflecting, the emotions that they experienced, and their expectations of the professional development programme served to re-assert and also re-establish their identities. Their identities as facilitators of learning were different now to what they were when they started off with at the beginning of this cycle.

5.7.2. What feeds into the next cycle?

The student teachers were engaged in a discussion with the specialisation lecturer to prepare them for the schools. This discussion focused on the specialisation lecturer preparing the student teachers for the school experience. The student teachers were to spend a week tutoring at the school and collecting the programme for the seven weeks that they were to facilitate at their assigned schools. He did warn them though that “what you are going to experience in the school may be very different from what you have experienced and learnt up to now.” He advised them to go to the laboratory when they were at the school. They were expected to interview the laboratory manager to establish the laboratory organisation. This would be important for them when designing a learning task as they needed to be able to do that before they got the learners to do it.

The student teachers were to spend eight weeks at a particular school with a particular teacher that they were to be assigned to. They will spend the first week of the eight weeks at the school tutoring the learners and collecting the facilitation of learning programme for the seven weeks of facilitation that will take place at the beginning of the second semester. This preparation was linked to the suggestion by Dryden & Vos (1999) that student teachers facilitate learning in a real context.



Descriptive data – cycle three

6.2. Step 1: Experiential reflections

6.2.1. Bernice

6.2.1.1. *Experience of tutoring the learners and observing the teacher mentor teaching*

Bernice's teacher mentor gave her transparencies with notes to place on the overhead projector for the learners to work from. Bernice felt uncomfortable to do this and expressed this by stating "just feeding the learners with stuff". Bernice stated that she wanted "to give the learners some interesting things to do not just the transparencies". This view is presented in the literature by Aspin & Chapman (1994).

6.2.1.2. *Meaning of practice theory*

Bernice's constructed meaning of practice theory was, "you need to be in the situation and try and try different things until you found something that really works." She further illustrated her meaning by stating "the Bushmen were not told to sit and then the instructions on how to go hunting was told to them. They had to learn how to hunt through experience. Practice theory is to be used by us."

6.2.1.3. *Constructing "phronesis"/practice theory about designing learning tasks*

a. Ideas for learning tasks

Bernice got ideas for designing her learning tasks from looking at real life crises (Slabbert & Hattingh, 2006). She described the process of getting ideas for the Blood system - *she wrote down all the problems you can get (stroke, cholesterol, blood clotting, and anaemia), combined all the problems and linked them to the parts of the blood system included activities like, heart dissection and measuring heart rate.* She did state though that these ideas for activities were "not my bright idea, I got this from a textbook". Her choice of activities in the learning task was influenced by her beliefs that if learners enjoyed it then they would learn more. Also if the learners were interested then the learning task would have meaning for them and if it is relevant then they will enjoy it. She was aware that as a facilitator of learning she had to make a plan on how to prevent learners from going off task during a learning task operation. She was concerned though with how she was going to solve any problems if she experienced them.

b. The laboratory work of a learning task design

Bernice planned to do a heart dissection with the learners as this was a practical in the section on the Blood system. She stated that "the last time that I did a heart dissection was when I was at school". She knew that she had to work out how to dissect the heart - "I will find out, that is why I am here, in the laboratory". She described this finding out process. She and Carol worked together as they were both designing learning tasks on the blood system. She expressed her feeling of working collaboratively with Carol when she said that "it is nice to do it with someone who is at your level as we can look and talk about the structure." She was aware that she needed to discover for herself when she stated "maybe I

would be tempted to ask him [Professor Ned] questions instead of finding it out myself.” Bernice constructed knowledge about preparing specimens for practical work. She had observed these preparation requirements when she worked with Carol in the laboratory. They experienced problems with the heart specimens as they were frozen and “the sheep heart was okay but the ox heart was a problem as it was cut into pieces.” Bernice was aware of her role in facilitating learning of practical investigations in that it was important for her to “record what she did because if something went wrong I will be able to re-do what I did”. Bernice said that for the learning task consolidation she would “get the rest of the learners to ask critical and clarifying questions of the group that was presenting.”

c. Presenting ideas for the initiating learning section of a particular learning task

Bernice’s idea for initiating learning was to present the learners with a game puzzle to solve. This initiating learning section had instructions and learning organization

6.2.2. Carol

6.2.2.1. Experience of tutoring the learners and observing the teacher mentor teaching

Carol was concerned that her teacher mentor spoke in Afrikaans and also in English and that the particular language speaking learners were placed on different sides of the classroom. She decided that when she is facilitating learning she would “speak in English only and I will get the learners to work it out.” Even though Carol is Afrikaans speaking she felt that a lot of time was wasted in class to talking.

6.2.2.2. Meaning of practice theory

Carol viewed practice theory as linked to who the person is and “what you would like to happen.” She did not want learners to do badly so she suggested that she would “reward them. The real reward for the learners lies in them experiencing the activity.” Her understanding of practice theory was that it was developed from “research that was done then they developed the theory.” But later she stated “we use practice theory to facilitate learning”.

6.2.2.3. Constructing “phronesis”/practice theory about designing learning tasks

a. Ideas for learning tasks

Carol’s ideas for learning tasks were influenced by enjoyment and learning, types of activities and the learners’ views of learning. She supported the enjoyment and learning from her own experience - “if I enjoyed an activity I will learn more and I will remember more and I will remember less if something is boring”. Carol thought that some activities required more teaching while there were others “that you could learn more from”. The learners’ views of learning were that learners were exposed to “immediate gratification in life [and] this was linked to their thinking that education and learning was easy” therefore they did not have to put effort into it. This view she said was enforced “by the one word answer worksheets that they fill in for class activities.” She was aware that a child would feel good “if she/he came up with something that the teacher did not know, as a result of research”. Carol thought that this

expectation of substantial justification from learners is what made a learning task different and challenging.

b. The laboratory work of a learning task design.

Carol had planned a learning task on the Blood system. She commented on planning the practical cooperatively with Bernice when she said “we observed the various parts of the heart and found it interesting.” She was aware that “we can design as best we can but in the classroom the design could change.” She was also aware that in designing the learning task you need to consider resources “available to the learners at home and if they can bring the stuff to school”, provide guidelines by saying to the learners that they have “to explain their findings and link them to the problem statement.”

c. Presenting ideas for the initiating learning section of a particular learning task

Carol’s ideas for initiating learning in a learning task on the Human skeleton for grade 10 learners was to give the learners questions like “What do you think are the best material to build different parts of a skeleton and then you need to decide on which part of the skeleton you can improve on”. She stated that she would also present learner instructions and organization.

6.2.3. Mack

6.2.3.1. Experience of tutoring the learners and observing the teacher mentor teaching

Mack stated that the teacher was quite organised as she had told him what sections of Biology he was to facilitate. Mack had observed that the teacher made use of group work and she had “groups of all boys, all girls, all Blacks, all whites”. The teacher’s reason for grouping the learners in this way was based on geographical reasons “they all live in different areas and when they are given a project then it is difficult for them to meet to complete the project”.

6.2.3.2. Meaning of practice theory

Mack’s constructed meaning for practice theory was “what you learnt in theory and how you put it into practice. Part of developing practice theory is that people tried things differently.”

6.2.3.3. Constructing knowledge about designing learning tasks

a. Ideas for learning tasks

Mack’s idea for an activity was suggested by the teacher mentor. His understanding of constructing a learning task was that there are questions that need to be focused on like “what are you trying to achieve in the activity, are the activities in the learning task relevant and enjoyable?” When he evaluated the learning tasks that he had designed he said they “were stimulating but not enjoyable yet.” According to him the relationship between enjoyment and learning was his belief that “enjoyment makes a person want to learn as it is an intrinsic thing. His thinking was that “learning becomes intrinsic automatically because if they are enjoying it, it (the learning) comes by itself” and that “the learners’ enjoyment during the process of learning lay in what they achieved at the end by learning.” Another feature which he

thought needs to be considered in designing a learning task “is to ensure that learners take up a challenge.” He was concerned with what would happen, “if they did not take up the challenge”. He was aware that he would have to present the learning task properly to the learners for them to take up the challenge. He was also aware that the best way to “grab the learners’ attention is creatively” by getting “the children’s’ minds going as they think that they are scientists and they get interested.” To do this he said that he would “not just enter the class and then speak to the learners as what the teacher normally does.” He was going to stimulate the learners from the outset.

b. The laboratory work of a learning task design.

Mack saw the need to trial the practical before giving it to learners when he said “we will be on our own in the schools, we will make mistakes there, so it is better that we trial things here” and “I will have to get to grips with how to do it and how to handle the material.” Mack stated that he needed agar but did not know how to make it. When he asked the specialisation lecturer for advice he was told “there is agar in the laboratory, you will have to sort out the quantities, so go to the library, get the book, and you work it out”. This expectation of learners to access resources is presented in the literature by Armstrong (1991). Mack was aware that when he gave the learners an experiment linked to the learning tasks he would have to ask them to describe the process that they used and to substantiate their findings. He stated that for the learning task consolidation he would, “get the learners to present”, and if the learners asked tricky questions, this would be important so as to, “increase the quality of their learning and thinking”.

c. Presenting ideas for the initiating learning section of a particular learning task

Mack’s ideas for initiating learning in a learning task on Classification for grade 11 was to divide them into groups and for them to work out the reasons for the choice of group. Also a game could be used where learners sort cards out into groups. This could be followed by a class discussion (Slabbert, 2007).

6.3. Step 2. Reflecting and interpreting

- What was the role of the teacher-educator in the discussion-group sessions and why did he have this role?

The following exchange is presented as it is representative of the way in which the specialist lecturer conducted the challenges to student teachers’ construction of their practice theory, and in this particular section dealing appropriately with sensitive and/or controversial issues regarding the construction of a practice theory of and for facilitating learning in the Life Sciences.

The specialisation lecturer *initiated the discussion*. Mack stated, “Professor initiated it.” The specialisation lecturer *set the scene for the discussion session and prompted the students to participate* in the discussion by stating, “you have come from the schools and are there any things that you want to

share and any questions that you want to ask?” The specialisation lecturer challenged and supported the student teachers by stating “I think that is good that you can look at things and ask the questions like the one that you asked, this is what this teacher is doing but what will I do?” (Claxton, 1999). He made the student teachers *aware of the guidelines* with regard to the interaction between the school and the university when he said, “we can guarantee that work will be done but cannot guarantee that all classes will be paced the same.” He also made the student teachers *aware of the relationship between the schools and the university*, this “is a very sensitive thing. We need to be very careful as schools are running at a pace and we must not disturb them”. He *prepared the student teachers for the context of the schools* (de Kock & Slabbert, 2003) that they could possibly experience by stating that “what you are going to experience in the school may be very different from what you have experienced and learnt up to now. Some schools are not ... implementing Outcomes based education”.

He raised the *concerns that the student teachers had* about stepping into the classroom and the role that they would have to play in the classroom. He advised them by saying “the first impression and the first steps are crucial as the learners need to know where they stand with you and you have to take a firm stand to let them know what they can and cannot do”. He further advised “do not become familiar with the children; when children challenge you be sharp and do not challenge back and this will turn them around.” He also advised “When you get into class you must know what you are going to do.....and do it, but if you are uncertain...this could be destructive” (Slabbert, 2007).

The specialisation lecturer also highlighted the importance of how learning should take place. He used the example of the Bushman and asked “how did they learn and what were they educated for?” He wanted to re-enforce the purpose of learning and more importantly the role of learners in the learning process. He also raised the importance of the feelings linked to learning and he used skateboarders as an example. He said that “the feelings that skateboarders get when they achieve “a trick – they experience happiness and fulfillment and they feel proud, they also experience a change in their order of consciousness.” He challenged them to respond to the question “does this happen in school?”

He *elicited the student teacher’s understanding about practice theory* when he asked them to “talk to me, what is your perception of practice theory. We have already established that it is not theory and practice”. He was prompting the students to think back to a previous discussion about practice theory and to rethink their understanding of practice theory. He used Carol’s understanding that practice theory is linked to her rewarding the learners” (Kolb, 1984). He got her to think further when he stated, “reward or recognition” and challenged her on the underlying assumptions that she had about this. He challenged her further when he asked her about what the real reward for learners should be. Carol stated that the real reward for the learners lay in them experiencing the activity. Professor Ned also challenged her response further by stating “the real reward for learners is when they experience exhilaration when they do what they did not think they could do”.

He told the students that when they are *discussing the designing learning tasks* (Aspin & Chapman, 1994) they need to consider restructuring the tasks given by the teacher. He suggested that they “work out some challenging question that will take the learners’ time to figure out and solve the problem”. He

shared ideas about co-operative learning which arose from Carol's input about the teacher and the learners where there was a language issue in the class with Afrikaans learners on one side of the class and English learners on the other side of the class. He said "this is a bad situation as this accentuated separation, whereas this situation could be used to exploit co-operative learning". He further stated, "It may take time for the learners to work in co-operative groups and they need to have the experience of it for them (the learners) to see this is how it needs to work". He also stated that co-operative learning is not a necessity but it is essential.

He provided the student teachers with a case study and he questioned their thinking about it. He did not provide them with answers instead he got them to question their own responses further. Evidence of this can be seen in the following excerpt:

Mack: The teacher mentor gave me things about spermatogenesis. How will I make sure without telling them exactly how spermatogenesis takes place, that they will learn the terms that they need to know?

Specialisation lecturer: I do not know. Only when they go to the particular step and you start doing it will you know.

In discussing learning task design the issue of morals and ethics was raised (Department of Education, 2003). The specialisation lecturer did not tell the student teachers what to do in these instances but he challenged them (Von Glaserfeld, 1984) as is evident in the following exchange:

Carol: I am against abortion and that person is not, how will we work this?

Specialisation lecturer: The question is not how but what about it?

Carol: I will not compromise?

Bernice: In psychology, the aspect of abortion has been one long fight

Specialisation lecturer (clicking his fingers): The disadvantage of argument is that there is anger. What attracts people to you?

Mack: Respect

Carol: You listen to them

Specialisation lecturer: If you listen to someone what does the other party feel?

Mack: You value their views

Specialisation lecturer: but if I am in a relationship with you, this is different. Also never compromise.

Mack: At what point does Carol share her true feelings?

Carol: I cannot say that I am against it.

Mack: You can- you have an opinion.

Specialisation lecturer: You can

Bernice: The learners may feel that they are on an opposing side, might feel that they are wrong because the teachers don't agree with them

Specialisation lecturer: If you are asked

Carol: Yes I will tell them.

Bernice: If I just stand up and say I agree with them but not them

Specialisation lecturer: It is not what is said only. It is how you are as a human being; a full person and also that you have convictions

Mack: I believe I will not cover myself. I do not see why I should back down from my beliefs

Specialisation lecturer: Carol you need to feel comfortable with how you handle in your circumstance. I think that we got to the point that controversial issues and there is diversity. As a facilitator what immediately do you need to do in the learning task now?

Carol: I will look at it again. I will strengthen it.

In this social grouping (Wortham, 2001) the student teachers constructed their “phronesis” of how to facilitate controversial issues that are raised/discussed in class.

The specialisation lecturer *elicited the student teachers understanding about designing learning tasks* (Smith & Blake, 2005), “let us start by asking how you got ideas into the learning tasks”, and later he stated, “what are the underlying principles, what are you trying to achieve in the activity?” They discussed the responses that the student teachers gave and he gave guidelines about learning task design, still challenging them further, “The one principle is whatever you focus on, look at activity; activity should not be done for the sake of the activity, done for the sake of learning.”

The specialisation lecturer made the *student teachers’ aware of the importance of learners learning from the designed learning task* (Slabbert, 2007) as evidenced in the following extract:

Specialisation lecturer: What are we after, ... enjoyment or learning? Surely learning. Don’t look for enjoyment then add learning. First criterion is learning, is it quality learning, then add enjoyment. Again, remember- what is the relationship between enjoyment and learning?

Mack: Enjoyment makes person want to learn- intrinsic thing.

Specialisation lecturer: When will the thing they do become intrinsic? When will the enjoyment be intrinsic?

Mack: Automatically, if they enjoying it comes by itself.

Specialisation lecturer: What makes enjoyment?

Bernice: When interested has meaning to you or is relevant, and then you enjoy it.

Specialisation lecturer: Think about it, when do you enjoy things?

Bernice: When they are generally different

Specialisation lecturer: Let us jump to the point. The point is the following: learning is very hard and often protracted, difficult and not easy, therefore it is not enjoyable.

So in the process of learning, wherein lies the enjoyment?

Mack: What they achieve at the end by learning

Specialisation lecturer: The achievement at the end, wow we did it. The new order of consciousness that comes because of the peak experience.

Further discussion about some of the *learning task outcomes* (Slabbert, 2007) that the specialisation lecturer shared with the student teachers took the following path:

Specialisation lecturer: End product outcome is the product that they (learners) need to produce. There are four kinds of end-product outcomes - physical object, decision, process and service that the kids produce or generate. A process to produce something In this case what is end product.

Bernice & Carol: Decision

Specialisation lecturer: Decision to do what?

Bernice: Play a role

Specialisation lecturer: Well, play a role, what else? In process of learners telling their peers about it what are they doing?

Mack: Service

Specialisation lecturer: They are rendering a service, a consultancy. Tie into one another. Go back, how enjoyable will that be? If kids know that they are going to interview mothers, sexologist how enjoyable do you think they will think that is?

Mack: Could be enjoyable if you take up challenge, but if they don't take up challenge.

Specialisation lecturer: What is your concern? What should you do for them to take up the challenge?

Mack: Present it properly.

The specialisation lecturer *elicited the student teachers' feelings of sharing their ideas* (Hargreaves, 1998) in the group setting when he asked Carol "how do you feel, using your ideas for the learning task example?" He then used Carol's idea to extend the stage for them to construct knowledge about designing learning tasks:

Carol: The learners can build the skeleton and work out how it functions etc. I will let them choose parts, where the learners pick a piece and see how you can make it better.

Specialisation lecturer: Do not let them choose. All may choose the foot. Ensure that it is done equally. Give them parts to do equally.

The specialisation lecturer *shared the laboratory focused learning task expectations* with the student teachers when he said "when you are designing the learning tasks we would like you to be able to do that (practical) as mentioned in the literature by Heyligen (1997) before you get the learners to do it. You can then re-design the practical in your own time".

The specialisation lecturer *raised questions about the student teachers' presentation of their initiating learning* part of their learning tasks:

What were your experiences – was it easy for you to stand up and just present it. How can we re-work, re-phrase the problem so that the problem is the focus. Then you go to presenting the organizational part. If you confuse the problem with the organizational aspects then the essence of the problem disappears.

He also asked the student teachers to reflect on their problems and on how they will ensure that learners are made aware of the importance, urgency and action linked to the problem (Boud, Cohen & Walker, 1993).

The specialisation lecturer used one of the student teachers presentations as a focus and to share ideas/suggestions of what needs to be done (Lombardi, 2007) to improve the presentation:

Specialisation lecturer: Let us think about Mack's problem. What was your intention about the first part of your presentation?

Mack: That they see that their criteria would be different from someone else's

Specialisation lecturer: Is this the only way that this could be done?

These experiences were important for the student teachers' construction of their practice theory (Brown, Collins & Duguid, 1989). A significant and essential role was played by the specialisation lecturer. He did not give the student teachers answers to the problems that they shared but he expected them to construct and co-construct ideas and actions (Burr, 1995) that could be followed in particular teaching and learning contexts (Slabbert, 2007) .

- What was the student teachers' experience of developing an understanding of the participatory case study action research process?

The student teachers stated that they felt comfortable with designing and responding to questions during the interview as they had structured their own questions they were asking what they were interested in sharing. I also asked the student teachers, "is there anything that should be changed with regard to the research process?" They stated that they were fully aware of the process and understood it, and were happy with it.

- What was the student teachers' participation in the group discussions and could this be done differently?

The students' participation is evident from what Bernice said "anyone could pitch in". Their participation was open and they freely shared their opinions.

- What were the student teachers' feelings and understanding about their construction of knowledge about a learning task

Bernice, Carol and Mack indicated that they were the only group who understood learning tasks.

Bernice expressed her feelings about this “I am not afraid of a learning task as I know what it is like and what is expected of you.”

Carol said that the other students had knowledge of it but “they understand them differently because their lecturers have a different idea.” This difference in understanding was linked to the duration of a learning task “we stretch our learning tasks over five weeks while they have a different learning task for each day”.

Mack stated that the other students “did not know if they will find time for co-operative learning.” Mack stated that “they saw it separate to facilitating learning.

- What were the student teacher’s reflections of their school-based experience (one week)?

Bernice stated that “she had fun” as her mentor was not in the classroom. She described her role as “explaining the stuff to them”. She concluded that it was “nice to see it was working out”. The evidence that she used to make this conclusion was based on the learners giving her positive feedback about the way she explained and that they enjoyed the class.

Carol expressed mixed feelings about the experience. Initially she felt excited and enthusiastic about going to the school but these turned to “a damper on my enthusiasm” as she experienced fear and boredom. The lack of enthusiasm and fear were attributed to her observation of the learners’ behaviour in the classroom. She stated that “the children did not listen to her [the teacher mentor] it was chaos in her class most of the time”; “the classes that I was to take are the two most difficult classes”. She stated that it was boring because “I just sat there the whole time”. But she used this experience to decide on how she was going to work with the learners “I think that they are not that bad it is just that she does not handle them very well. I will be the opposite. I will be very strict.”

Mack stated that he had “enjoyed my time at the school – it was lekker⁵.” But he also experienced boredom as “I was just sitting and observing.”

- What was each student teacher’s practice with reflections?

Bernice described her practice in terms of her feelings about reflecting when she said “reflecting does not stress me out. It is not that big a deal.”

Carol shared her understanding of reflecting when she said “a reflection is referring to what happened, what you learnt, how you feel.” She also shared her action of reflecting “I did not know what to do, I just guessed” and her concerns “the problem that I have is that I forget to reflect.”

Mack shared his uncertainty about what and when to reflect when he said “I do not think that we are sure about when to reflect. I reflect on the school sessions but I am not sure about reflecting about lectures.” The use of the words I and we are interesting in that we is used as a collective linked to a problem. He also shared the contribution of the specialisation sessions when he said “we are supposed to reflect every day...on what had happened at the school. He also indicated the purpose of reflecting when he said “used these to discuss the problems we were experiencing.”

⁵ Lekker is an Afrikaans word that means nice.

- What was the student teachers' understanding of "phronesis" (practice theory)?

Bernice's understanding was also informed by "we spoke about this in the specialisation session." Her understanding was that "the only way you can get something like practical wisdom is by experience." She thought that when some lecturers tell you "this happened to me that is worth more than plain theory." She said that she could then relate these happenings to her own and "think yah I saw that."

Carol gave meaning to it in terms of her own practice theory which she saw as a "kind of just theory at this point". But she then stated that she "saw all the students as having the theory no practice."

Mack stated that practice theory meant "forming your theory from your practice." He understood that "through your experience in the classroom you are able to build on your theory." His understanding also included practical life experiences and what you know "about yourself, how you interact with other people."

The student teachers each have their own particular meaning for practice theory. Mack was aware that practice forms your theory and its importance would be in the school where it could be used. Bernice was aware of experience but she saw the practice as that outside herself and as a complement to the theory. Carol on the other hand only saw it as theory.

- Collegial support of practice – what was the student teacher's experience of sharing sections of their learning tasks during the discussion sessions.

Bernice stated that she "felt good" only when the comments made sense to her. She did admit though that sometimes "it was really good advice" but because she could not see herself doing it, "it was not really good advice.

Carol stated that she "felt good" only when she thought that the advice would work and when she could see that she would "be able to do that."

Mack stated that he "felt good to get advice and to see how other people think."

All three students felt good about the collegial support. Each student's feeling was due to certain factors: Mack – advice and peoples ideas, Bernice and Carol – the evaluation of the advice was linked to how it applied to them, if they could do it.

- What were the student teachers' experiences of the university laboratory session?

Bernice expected the session to be organized and she was disappointed when she saw that it "was less organized as I hoped for. Things were not there". But she expressed that she "learnt something... class organization, two learners will work on one heart and they could both cut one ... you cannot force everyone to do that" (dissect the heart). She also learnt that "if you want to have the kids to develop the skills then you have to get them to dissect the heart." She valued the experience as she could now "use all the equipment & make sure that everything is not so hard."

Carol stated that even though she expected more assistance during this session, “she still enjoyed it.” This enjoyment came from her realising that “at the school we are going to be alone anyway and we are going to do everything ourselves. This is a real life thing, an opportunity to experience.” She also realised that she already had a “better understanding.” From this experience she concluded that “planning for a practical session is a crucial part because I know what they (learners) need and what they have to do.”

Mack experienced the session to be “a bit less organized than I hoped.” This lack of organization was due to him not finding apparatus and knowing how to make agar (a substance that he needed for the practical). He was frustrated because he had to go to the library to look for information on agar. But, he had “fun making the agar.” He realized that “once you have experienced the practical, you can then work out what and how to assess it.” He concluded that “when he is working with learners he will assess them in order for me to work out if they understand.” He stated that his “most valued experience...was finding a very nice book in the library that had the necessary information”.

- What do the student teachers’ understand about their role as a Biology facilitator of learning; facilitating learning of Life Sciences and the role of learners in the learning process?

Bernice saw her role in feeling terms as she said it was “a fun experience and also in a role of “explaining stuff” to the learners. She saw the learners in an “active questioning” role.

Carol perceived her role in an emotional way as she was excited and enthusiastic but these feelings were dampened by the fact that she was to take the two most difficult classes. She also perceived her role in a management aspect in that she was going to be “strict with the learners.”

Mack understood his role as a facilitator in an organizational manner - he stated that he would “be organized” and he would “use group work with mixed groups.”

- What were the student teacher’s reflections on their experience of presenting initiating learning of their learning tasks?

Bernice thought that it was “fun and I felt fine doing it.” This experience led her to believe that “if I stood in front of a class I will not worry”.

Bernice had presented a problem because she thought “this is the thing that needs to be given to them [the learners] first.”

Bernice stated that the problem that she presented to the learners “had too many different things” for them to do. She realised that she “confused the problem with the organizational aspects of what the learners need to do.”

Carol evaluated her presentation when she said “I do not think that mine or anyone else’s presentation was gripping enough or stimulating.”

She was aware that she had given necessary organizational instructions to the learners about what “they needed to do about the activity.” But after reflecting on the problem that she posed she realised that she had not given the children “enough information for them to understand how to go into action.”

Mack evaluated his presentation when he said “I should have split the presentation in two.” Mack described his presentation as “explaining to the learners what they need to do.” After reflecting on his problem Mack stated that “it does not encompass everything ... it is important that [it] has clarity.” He decided that he would have to “think further about it ... [to] “make sure that the learners understand what I said.”

6.4. Bernice, 6.5. Carol and 6.6. Mack

Step 3, 4 and 5 for each of the student teachers is presented in this section.

The data for step 3 was collected using document analysis (learning task planning documents and the student teacher’s reflective journals in their professional portfolios). The data for step 4 was collected using the observation schedules, document analysis from the student teacher’s professional portfolios and my observations. The data for step 5 was collected from the semi-structured, stimulated recall interviews conducted in the post-lesson session and the student teachers reflections. The analysed according to Mezirow’s levels of analysis - by looking at the content (what), the process (how) and the premise (why) to make meaning (Wang & King, 2006) of each of the student teacher’s constructed “phronesis”. The data is described and analysed on pages 236 – 281.

6.4. Bernice

6.4.1.A. Step 3: Planning action (Learning task 1)

Bernice was based at a High School from the 19 April to the 4 June. During this time she facilitated two learning tasks: Human skeleton and the Human Circulatory system. Her first learning task was on the Human skeleton. This learning task was presented to a group of twenty-six Grade 10 learners from 19 April to the 21 May.

6.4.1.1.A. Learning task design (See Appendix for a copy of the learning task designed).

This learning task had the following features: learning outcomes, assessment standards, problem put to learners, time allocation, learning task preparation, class organization, authentic learning conditions, resources, learner expectations and methods of assessment. Two activity sheets were attached to this learning task design. The first activity sheet had the problem statement clearly written and organisational aspects e.g. group evaluations. The second activity sheet had the Human Skeleton final report assessment rubric. The assessment planned was for each group of learners to set a 10 mark test for the rest of the class members and for the learners to submit a written report which was to be assessed according to an assessment rubric that Bernice had designed.

6.4.2.A. Step 4: Taking Action (Learning Task 1)

6.4.2.1.A. Learning task operationalised

Bernice presented the problem that she had designed to the class group: At the back of the classroom was a drawing of the human skeleton for each co-operative group. Bernice told the learners that the

drawing looked strange because an Orthopaedic Surgeon had made changes to the skeleton. She challenged the learners to observe the drawing and to “determine if these changes are an advantage or a disadvantage to people and what the implications of these changes are” (Claxton, 1999). The learners were then left to work in their groups.

This learning task focused on both substantive and syntactical aspects of Biology. Bertha had considered and implemented co-operative learning (Slabbert, 2007). She had divided the learners into eight co-operative learning groups of four learners each. Bernice used appropriate criteria to place the learners into groups - learner performance (previous terms marks were used), gender, culture, and no friends. Her method of grouping was based on her rationale that the use of heterogeneous groups in class was effective. Bernice was aware of the impact of the syntactical and substantive aspects of Biology on her competence to facilitate learning.

6.4.2.2.A. Learning task assessment

The learning experience was assessed by Bernice herself (self-assessment), and the researcher (see appendix).

a. Self assessment

Bernice’s written self assessment focused on the initiating learning and maintaining learning parts of the learning experience. In the initiating learning section she assessed: the learning climate as “one that captivates attention”; the problem posed as “relevant, challenging and urgent but lacked clarity”; the learning management as “needs more design and planning for learner activities”. The assessment of the initiating learning also focused on: use of learning media as relevant; cooperative learning as highly effective and successfully used and learner involvement as “at times a few learners show an interest.” She assessed the time management as inefficient as it allowed for distraction. She assessed her communication as “enthusiastic, energetic and clear.” In the maintaining learning section she assessed her monitoring skills as “I tend to give solutions” and the managing feedback as “attentive listening, gives recognition and interprets main ideas.

Her development target was concerned with her using her time more effectively.

b. Researcher

The assessment had written comments and no marks. I advised Bernice to be clear about the instructions that she gives to learners. I also advised her to consider what she needs to do in the initiating learning phase to really get learners involved. I reported to her that her facilitation of the group presentation and the individual learners was good. I also challenged her to think about how she could have used the opportunity where a learner group presented inaccurate information about the ribs as a learning moment. I suggested that she “ask the other learners about the information presented.” Finally, I asked her if she noticed the learners’ excitement and boom of words during the demonstration that she had done and the implications of this for facilitating learning.

6.4.3.A. Step 5: Reflecting on action and interpreting (Learning Task 1)

- **What** was Bernice's understanding of practice theory and **how** was it constructed?

Bernice stated that she "learnt from class and the reactions of the class." She was aware that some learners are used to being told things and some people are verbal. She needed to "consider this when I am constructing a learning task."

- What were Bernice's feelings about facilitating learning of a learning experience at the start of the school based session

Initially Bernice felt worried that she was not going to feel as excited "as she felt when she spent the week at the school." But these feelings changed due to the learners' response to the learning experience "they are quite excited about what the surprise is and now I am excited again, looks like I am going to be learning something."

- **What** concerns did Bernice raise about operationalising the learning experience and **why** did she have these concerns?

She was concerned with the learners' behaviour "if they were going to be good" and if "everything would work out in terms of what I think". She was also concerned with what I expected when I assessed her. She knew that the class should be organised but she challenged this when she said it is "not usually organised, kids run the class- they do the presentation." .

- **What** highlights did Bernice experience and **why** did she have these?

Bernice was surprised that "some of the learners actually did the biology work after the presentation" and that they "were so good".

- **What** is Bernice's awareness of the learners' learning?

She thought that it was going well as evidenced by her following statements, "the learners are getting extra stuff done", "they come with interesting stuff that I did not make provision for", "collected information", "amazing stuff I didn't even think of". She concluded that they were "definitely learning beyond the curriculum."

- **What** is Bernice's awareness of the learners' feelings and actions and how did she come to have this awareness?

Bernice stated that the learners "were stressed about being videotaped" and therefore they were passive and did not ask many questions. This was related just to the observation of the learning task on that day.

- **What** was Bernice's thinking about the relationship between the facilitator and the learners?

Bernice thought that it was important to establish a "relationship with your learners." She was experiencing different relationships with different learners and she expressed this when she said "one of

the learners in the class asked the other learners to work with me, because I deserved it.” She also shared that “I can laugh with them”. She thought that having a relationship with them was important as “they then have respect and so they will work with you.”

- **What** was Bernice’s understanding of the role of a facilitator and how did she use this understanding to her construct her practice theory?

Bernice wanted to be relaxed and herself with the learners. She wanted to “laugh with them.” She concluded from observing many teachers that they “are totally stuck up and boring”. She could not understand why teachers did not have an open experience with the learners. She questioned why they are “keeping the wonderful person away (the teachers as people)?”

Bernice shared that in reflecting on her interaction with learners and these led to her changing her actions. She shared an experience where she was angry with a few learners and then she got cross with the whole class. She decided that “I needed to be fair” and to change her approach. She decided that she needed to be cross with just those “learners who caused disruptions”.

She purposely chose to work with “the two naughtiest classes” (I am using this word because it is used generally by the teachers and the psychologist, but I do not use it) and she evaluated her role when she said “I got more out of them than the other teachers.”

- **How** does Bernice perceive and use the actual contribution of the teacher mentor towards her construction of her practice theory?

She stated that the teacher had made a huge contribution in that she “answers every little question” and she “knows what the university expects”. She stated that she was “the happiest student of all with my mentor”. She also stated that she had observed the teacher mentor handling lively children in the class and “I have reflected on this” and from this she learnt what she needed to do.

- **What** was Bernice’s experience of the contribution of the specialisation programme towards her construction of her practice theory?

Bernice had listened to Carol describing the trouble that she had in her class. She also listened to the advice that was given by Professor Ned when he stated that “if you do not get co- operation, do not work.” She stated that “when I was designing the learning task I used the information” especially about how to form groups. She shared that she also “did it like how I experienced it on campus.” (her own experience in her undergraduate years – cycle 1, step 5). Bernice concluded that she did get help for Professor Ned and that “he mainly helped with administration stuff not really with content and context stuff.”

- What was Bernice’s experience of collaborative support?

Bernice valued working with her two colleagues in that “we sorted things out ourselves.

6.4.1. B. Step 3: Planning action (Learning task 2)

The second learning task that Bernice planned focused on the Human Circulatory System. It was presented to Grade 10 learners from 24 May to 4 June. (See Appendix.....for copy of learning task)

6.4.1.1. B. *Learning task design*

This learning task had the following features: learning outcomes, assessment standards, problem put to learners, time allocation, learning task preparation, class organisation, authentic learning conditions, resources, what is expected of each learner and methods of assessment.

6.4.2.B. Step 4: Taking Action (Learning Task 2)

6.4.2.1.B. *Learning task operationalised*

During the initiating learning phase Bernice presented the problem by reading a letter from the blood bank. This letter was addressing the shortage of blood in the blood bank and the urgent requirement for blood donations. She then managed the organisational aspects by giving the learners instructions on what was expected of them. She also gave the learners time to discuss the problem presented and she organised the learners to work in groups. The groups of learners discussed the task given and read the textbooks provided. She was a bit disorganised as while the learners were doing their group work tasks she started discussing the test that they were to write in the next few days. Bernice in monitoring the work progress of the learners walking from group to group and asked the learner groups questions about the task.

6.4.2.2.B. *Learning task assessment*

The learning task was assessed by Bernice herself (self-assessment) and the teacher mentor. (See appendix).

a. *Self assessment*

Bernice's self assessment of her learning task operation focused on initiating learning and maintaining learning. In the initiating learning section she assessed: the learning climate as "one that captivates attention"; the problem posed as "relevant, challenging and urgent but lacked clarity". She also assessed the learning management as "needs more design and planning for learner activities"; and the use of learning media and other resources as "relevant." Bernice assessed her use of cooperative learning as "partially effective" and the learner involvement as "good" as the "the total group of learners were involved, highly interested, motivated, took responsibility for their own learning." Bernice stated that she was "aware of the learners' needs". In maintaining learning her monitoring skills challenged learners to be confident, independent thinkers. She assessed her management of feedback as good as she focused on "attentive listening, gave recognition and interpreted the main ideas." She was happy with her time management as it was "well paced". She assessed her preparation of resources before the learning experience as bad and she concluded that "I need to rely on myself to get everything ready. I should not rely on anybody as everything was late." She decided that in future she "will do everything in advance."

b. Teacher mentor

The teacher mentor assessed the planning, all the outcomes and assessment criteria as “good.” She stated that Bernice was “enthusiastic and she had a good interaction with the learners.” In assessing the organization aspects she stated that “the learners were restless until the problem was presented to them and the creative presentation grabbed the learners’ attention.” The teacher mentor also assessed the role that Bernice exhibited by stating that “good introductory questions were asked to get the learners started but do ensure that all learners are working and not talking about other things.” The teacher mentor also assessed Bernice’s management of the learners’ discipline by stating “pay more attention to discipline”. Even though this assessment was directed to specific aspects of the learning task the teacher mentor praised Bernice for the good aspects and she also offered advice as to what could be done differently.

6.4.3. B. Step 5: Reflecting on action and interpreting (Learning task 2)

- **What** was Bernice’s construction of her practice theory and **how** was it constructed? (see concept map in appendix)

Bernice stated that this was the second learning task that she had presented. She saw the learners as being “taken out of their usual way of getting notes.” She described her role as “I am not giving them notes, I just ask questions.” Bernice stated that she had learnt from her operationalisation, assessment and reflections of her first learning task operation. She provided the following as evidence for her learning “with the second learning task I made a big difference. I did research and I checked the stuff before I started.” She also stated that she now “checked the learners’ work when they were doing co-operative learning to make sure that they are on the right track.”

Bernice was motivated by the learners’ responses “what is wonderful is that the learners tell me that they enjoy my classes because they are now able to explain things on their own.” She also stated that “they are becoming to realise that I will not give them any answers and that they have to think.” She observed that the learners could “answer questions, even difficult ones.” She stated that in the past “if the information was not in the learners’ notes they could not answer.” From this she concluded that “they are now independent thinkers”. She therefore thought that she could “increase their challenges and they would still answer the questions.”

She also thought that her role was to get “them to read it (problem statement brief) for themselves and to construct meaning.”

- **What** were Bernice’s feelings about the learning task operation and why did she have these feelings?

Bernice felt that this learning task did not go well as the learners were for some reason “trying to be funny” even though they responded in the learning experience.

Bernice stated though that she “had fun and I enjoyed it.”

- **What** was Bernice's understanding and practice of designing and operationalising a learning task linked to a context

Her understanding of this is that she "set the problem in the context of the learner's uncle who has a blood circulation disease." She was aware as to why she did this "because it is something that could really happen" it was relevant for the learners (Slabbert & Hattingh, 2006). She justified her choice of problem as "the use of this context made it more of a real life problem and also all the learners have an uncle."

- **What** concerns/challenges did Bernice experience designing the learning task and **why** did she have them?

Bernice stated that the challenge "was to see whether the learners would ask annoying questions or whether they would start work." She saw her problem with presenting as "how to get them started properly." The challenge therefore was for her to "design something that would get them" started quickly.

- **What** highlights did Bernice experience with operationalising the learning experience and **why** did she have these experiences?

She was happy that "the learners just started the work" and did not ask a lot of questions as they did in the past learning experiences. She thought that they "understand what I want from" and that the learners themselves were enjoying "the act of thinking ... the challenge."

- **What** was Bernice's expectation of the contribution of the teacher mentor?

Bernice stated that she expected the teacher mentor to support her "in a way that I can question her about things that I do not know."

- **What** was Bernice's use of the contributions of the teacher mentor in constructing her practice theory?

She stated that she used "planning of learning tasks and I have used the way the teacher mentor handles discipline."

- **What** was Bernice's perception of the contribution of the specialisation programme?

She thought that it had not "contributed a lot." The reasons that she gave were that "it is not that practical to do everything that we worked" with at university. She further stated that "the stuff you know you are supposed to do is not working because the class is not responding".

- **What** was Bernice's actual use of the contribution of the specialisation programme?

Bernice stated that she "could assess the quality of maintaining learning by looking at whether the learners are active; their discipline is managed and if she could organise them into groups.

- What was Bernice's overall reflections of her first school based education programme and how did these reflections give meaning to her construction and use of "phronesis".

Bernice stated that the two learning experiences were "more professional than the Hammanskraal attempt, but I have not yet reached the required show quality." She thought that these learning tasks could be used to "demonstrate progress". She compared these learning tasks to the one that she designed at Hammanskraal and she stated that "these learning tasks were complete in terms of their planning and they have clearly defined outcomes with problem statements."

Bernice was aware that the first learning task on the skeleton had "the disadvantage that much time was lost in each period"; as she had not organised and managed the task effectively – learners did short presentations and then had nothing do for the rest of the period. She was aware that the second learning task on the Circulatory System was "the better of the two ... [as] the learners were more actively involved" and they were "given more opportunities to think."

Bernice concluded that these learning tasks were the first ones that "contributed to the development of my practice theories as this is the first time I encountered concepts such as meta-cognition and co-operative learning."

6.5. Carol

6.5.1.A. Step 3: Planning Action (Learning Task 1)

Carol was based at a High School from 19 April to 4 June. During this time she facilitated three learning tasks: Human Skeleton, Human Skeletal Muscles and Levers, and the Human Circulatory system. The first learning task on the Human Skeleton was presented to a group of twenty-six Grade 10 learners from 19 April to the 21 May. (See Appendix for a copy of the learning task designed.)

6.5.1.1.A. Learning task design (See appendix for the learning task designed)

This learning task design had the following features: problem statement, resources, meta-learning, co-operative learning, learning task presentation, class organisation, product, critical outcomes, learning outcomes, assessment standards, assessment criteria and assessment method. Attached to the learning task design was a worksheet with the activity instructions and dates for various activities, the assessment rubric for the learner exhibition assessment, report assessment rubric and cooperative group assessment.

6.5.2. A. Step 4: Taking Action (Learning task 1)

6.5.2.1. A. Learning task operationalised

Carol designed the problem statement and gave it to the learners. The problem was relevant and challenging as the learners had to work with different levels of difficulty and a variety of activities to try to solve the problem. The problem was: What is the best, most economical materials that can be used to build different parts of the human skeleton. By using these materials what would be the most efficient and functional improvements that can be on the existing part and how do these improved parts fit

together to form a complete human skeleton. Substantiate and motivate the build of the improved part of the skeleton in a report. This problem challenged learners' understanding (Slabbert & Hattingh, 2006; Lombardi, 2007) about materials and design features important for the structure and also functioning of a particular part of the skeleton.

6.5.2.2.A. Learning task assessment

The learning experience was assessed by Carol herself (self-assessment), her colleague (peer assessment) and the teacher mentor. (See appendix for original documents)

a. Self assessment

Carol's assessment focused on initiating learning and maintaining learning. In the initiating learning section she assessed: the learning climate as "pleasurable but irrelevant to the learning outcome"; the problem posed as clear, but it "lacked relevance, challenge and urgency." She assessed her leaning management as "needs more design and planning for learner activities." The learning media was assessed as "little/some use of learning media and other resources." The cooperative learning was assessed as "managed group and/or pair work." The learner involvement was assessed as "at times a few shows an interest" and her time management as "allows distraction and the focus is on individual needs". Her communication was "clear and audible." In maintaining learning she assessed her monitoring skills as "tends to give solutions" and the managing feedback as "attentive listening, gives recognition, interprets main ideas."

Her development targets that she listed were: practice better management skills in the class, must be stricter, must create a better learning environment and must get the learners to listen as they have no option.

b. Peer assessment

Carol's peer assessed her learning task as "learning climate captivates attention, posing a problem was exceptional, clear, relevant, challenging and urgent." She assessed the learning management "as highly organized, suitably relevant for learner activities and you used relevant learning media and other resources." She described her cooperative learning as "highly effective as you made successful use of cooperative learning" The evidence for this was that "the whole group of learners were involved, highly interested, motivated, and took responsibility for own learning." She assessed her time management as "well paced." She stated that "she is aware of learner's needs and her communication was enthusiastic, energetic and clear." She also stated that during the maintaining of learning Carol "challenged learners to be confident, independent thinkers." Further comments that the peer assessor wrote were "I think that your learning task was outstanding as you had the attention of even the naughty children in the class and everyone participated." Another comment was: "You handled the facilitation of learning very well. Even when the buzzer went the children were still working and they wanted to work further. I think that this says a lot."

c. Teacher mentor

The teacher mentor's assessment of the learning task was: "the planning for the learning task was complete and innovative." She assessed the problem statement as "challenging but there are still learners whose attention must be captivated." She created a good learning climate but this can be improved. She also stated that the learners discipline was very good. She advised that Carol should see if she could get all the learners' attention before she started the learning task.

6.5.3.A. Step 5: Reflecting on action and interpreting (Learning Task 1)

- **What was** Carol's understanding of practice theory and **how** was it constructed?

Carol stated that she had a clearer understanding of practice theory. "It looks at what I do in class." She shared an incident in the class that she used to construct her practice theory. She described the "difficult" experience that she had with a learner and she concluded that "although I was very shocked with this situation in my classroom I know that next time I am equipped to handle it the right way. She felt that she had "learned from this situation."

- **What** were Carol's feelings and thoughts about the learning task designed and operationalised and why did she have them?

Carol stated that this was "the first **learning task that I designed and presented** to learners" She said that it was "hard to describe how I felt when I was busy preparing and then presenting my first learning task." This was the case as she expected more from this learning task but she did say that she was a 'bundle of nerves' while operationalising the learning task. She also felt "so much pressure and stress ... [and] unsure" while designing and presenting.

Carol realised that the learning task "could be improved on ... as it was not too bad but it was also not outstanding." Carol thought that the following aspects of the learning task could be improved on: clarity of problem, instructions, meta-learning, time and learner management. Carol stated that she had "realised that my standard was too high for the learners and I am struggling to find a middle ground." She stated that "after presenting my first learning task the skepticism I felt about this new paradigm was soaring and I was sure that it would never work". Her own practice of presenting the learning task and the teacher's assessment made her feel skeptic and negative. But she did conclude that the "whole experience was not necessarily a negative experience, and I did grow from this."

- **What** challenges did Carol experience and **why** did she have these challenges?

Carol did not have confidence in herself and she felt "uncertain about designing and managing the learning task." Her challenge was to develop confidence, feel secure and good about working with the learning task. Furthermore, Carol stated that "the learners have never done learning tasks in their lives and they were quite baffled with this new concept". She also stated that the learners were not used to "doing something" as they were used to just "sitting and listening to the teacher." A challenge that she

experienced was a conflict situation with a learner. She stated that she never “though something like this would happen in my classroom and not in the first week, but it did.”

- **What** highlights did Carol experience and **why** did she have these?

Carol described the experience that she had when she was observing the teacher mentor teaching. She said “I was very bored and stared at the information on the transparency that she [teacher mentor] was busy explaining.” She also observed the learners in the classroom and “suddenly realized that there were maybe two learners in the class that were listening to the teacher in front”. At this point she felt the internal need as described by Korthagen (2001) in the literature, for her to change. She stated that this was “the day that I had the AHA feeling for the first time.” She also “realized that this new paradigm in education is not absurd as I thought.”

- **What** was Carol’s expectation of the contribution of her teacher mentor to her practice theory?

Carol stated that “I expected her to support me with my learning task design presentation, consolidation and feed-back.” The reason for this expectation was that the teacher mentor “had been through the PGCE programme and she can give me some tips on that side.”

- **How** did Carol perceive the actual contribution of the teacher mentor towards her development of her practice theory?

Carol described her mentor as “very nice and helpful ... she does not restrict me,” and she said that she felt relaxed with her. Carol also said that the teacher mentor “will help if I ask her, but she will not volunteer”.

Carol’s perception is expressed by “she [teacher mentor] cannot influence my practice theory in a positive way.” She perceived this as the teacher mentor “teaches like a teacher, she stands and talks [and] ... she teaches different from what we expect.” Carol said that it seemed as if the teacher mentor did “not know anything about what we [student teachers] are doing.” Carol then concluded that she did “not think her [teacher mentor’s] practice theory and ours is similar.”

Carol also stated that when the teacher mentor assessed her learning experience she was confused and she did not learn from it as she “did not know what I did wrong, or how I could improve according to her.”

- **What** was Carol’s understanding of the role of a facilitator of learning and how did she construct this?

Carol constructed her understanding of the role of a facilitator of learning from observing the teacher mentor teaching, the conflict she experienced with a learner in her class and from facilitating learning through the execution of learning tasks herself. When she observed the teacher mentor teaching Carol questioned her own facilitation of learning – “maybe I didn’t research all the learners in my class and maybe they did not construct their own meaning about everything.” Carol though did conclude that “I

know for sure that the learners in my class achieved more than those that were sitting and listening in this [teacher mentor's] class.

Carol had experienced a conflict situation with a learner. After the conflict with the learner Carol said “I showed the learners that I am serious about ‘teaching’ and discipline in our classes and that I was not going to back down.” She also said “although I was very shocked with this situation [conflict] ...I know that next time I am equipped to handle it the right way.” She felt that she “grew in confidence ... I feel more self-assured in handling difficult situations.”

After facilitating her first learning experience Carol wrote, “this was the first really momentous moment in my development as a facilitator of learning. My first baby steps in the right direction.” This indicated her growth. – the beginning and the continuous, as she saw that more growth was going to take place. She concluded by stating “Teaching looked so mundane and ordinary with no real challenge and I finally accepted that the aim of education truly is to maximize human potential through facilitating life long learning as stated by (Slabbert, 2003).

- **What** was Carol's experience of the collaborative peer support?

Collaborative peer support took place during the university and the school based sessions. Carol stated that her colleagues were a great support – assessing the learning experience and also involved in discussing how “to design and operationalise learning tasks.” Carol shared an experience of “a week before I was planning the learning task I contacted my colleagues and told them that I had problems with ideas of how to teach the section.” She described how the three of them met to discuss the issue. She described how they socially shared their frustration (Wortham, 2001). She remarked that she did not think that the “meeting was very constructive as it was just a moaning session. We spoke about our frustrations and the difficulties that we were experiencing.”

- **What** was Carol's perception of the role of learners?

Carol was aware that it was important to work with learners' feelings. She stated that “it was a difficult situation for me [working with the new learning tasks] ... the learners were negative about the improvement that they had to make on the skeleton”. She shared that when she had conflict with a learner “I followed his lead and I treated him with human dignity, respect and assisted him as well as I could.” As a result of this the “learner continued to work hard in his cooperative group and gave his best”. She was surprised that he really wanted to maximize his potential because even though he might not have been the ‘smartest’ learner he really showed improvements”

6.5.1.B. Step 3: Planning Action (Learning Task 2)

Carol had planned a learning task on the Human Circulatory System and the focus was on Cardiac diseases. This learning task was presented to eighteen Grade 10 learners. Carol had planned and prepared assessment rubrics which had excellent structure (see assessment rubrics in appendix).

6.5.2.B. Step 4: Taking Action (Learning task 2)

6.5.2.1.B. *Learning task operationalised*

The learners entered the class and organised themselves in groups that they had been working in. There was a heterogenous grouping of learners of mixed race and gender. Carol started the learning experience by reminding the learners that they were presenting their projects on Human Circulatory system – Cardiac diseases. She also cautioned the learners to be prepared to speak when it was their turn to present. When she asked the learners if they were ready to start with the presentations the problem of group members being absent was raised. The learners were frustrated, and one learner stated “she is absent and she has all the material for her part now our presentation will be incomplete and we will lose marks.” In Carol trying to sort this out the learners were getting unsettled, but she managed to contain the situation.

6.5.2.2.B. *Learning task assessment*

a. researcher (See appendix)

This learning task was only assessed by me. Carol, the preparation for this learner group presentation session was excellent. You presented and explained the assessment rubrics to the groups very clearly and methodically. Do ensure that they all understand how to use the assessment rubrics and you could practice this with them before they start the presentations. When the groups are presenting do intervene to support them with their language difficulties. Your discipline control was well managed. Carol, the overall learning experience was well managed. The idea of the group presentations was excellent. You need to focus on managing the time and the dynamics of the group presentation.

6.5.3.B. Step 5: Reflecting on action and interpreting (Learning task 2)

- **What was** Carol’s understanding of practice theory and **how** was it constructed?

Carol stated that her “understanding of practice theory is clearer now than what it was in the beginning”. She understood that it was constructed “from the experience at the schools ... [where] I have to facilitate more.” She stated that when she went to the school she had her theory “but now you are developing your practice. So by developing your practice you can actually now make it your practice theory”. She thought that “the theory is the theory and your practice makes it kind of yours.” She described her practice theory when she said “I wanted to do so much in one period, that you forget about the time and then the period is over and you think I did not consolidate or get feedback I just did my action.”

When Carol spoke about her discipline she was aware of what she needed to improve and she said “for my next school I will be stricter from the beginning rather than try to be relaxed.” She also evaluated the use of group work “I do not think group work, works.” She had observed the learners working in groups and she said that the learners “do not like it. Learners think: I do the work and I get this mark. Someone in my group does not do work and they get the same mark.” Carol thought that co-operative learning had its uses but it had problems as the learners “do not like presentations and they do not listen to their

classmates.” She was aware of this from her own experience “at university I do not listen to my classmates when they are presenting”.

- **What** were Carol’s feelings about the learning experience operation and why did she have these feelings?

Carol did not feel good about this learning experience because “learners were not excited at all.” Her feelings were also linked to the learners’ performance “I was disappointed, I expected more of them.”

- **What** challenges did Carol experience with operationalising the learning experience and **why** did she have these challenges?

Carol’s challenge that she “experienced is that I must also know the stuff [content] in order to ask them questions.” She stated that she wanted “to know so much more [so that she could] challenge them”. Carol also saw “time is a challenge” especially when working with learner group presentations. Further challenges were with disciplining the learners and motivating them to ask questions. Carol stated in lessons where learners present their work she found it difficult to “focus on the learners, listen to the presentations and keep them quiet.”

- **What** highlights did Carol experience in operationalising the learning experience and **why** did she have these?

Carol stated that she was excited when two learner groups had completed and presented their presentations very well, they could answer questions asked and they “found stuff that they did not need to know about, which was outside the curriculum.”

- What did Carol expect of the teacher mentor? **How** did she perceive the actual contribution of the teacher mentor towards her construction of her practice theory?

Carol stated that she did not “expect that much.” She did say that she “really does help with problems. She asks if I am okay or I need help.” Carol assessed the teacher mentor as a person who “really thinks about her children even though her discipline is not the best.” From observing the teacher mentor she acceded to the thinking “that everyone has his or her own method [practice theory].

- How did Carol perceive her role as a facilitator of learning and how did she construct this perception?

Carol while facilitating learning at the school was aware that she wanted “to be a mixture of all these things: to know my subject; the children to enjoy, and I do not want to be boring; for it to be fun, but not too much fun because it gets out of hand.” She understood her role as “I have to set the tone in the classroom” and facilitation of learning “I can see the use of feedback and consolidation and “I teach very little and would like to teach more but I resist it.” She shared that some learners had asked her why she did not “stand in front and teach them”. The reason that she gave for this was “do you actually listen to the person while they are teaching?” She shared the learners’ responses “they said that they did not.”

Carol wanted to be a motivating force in the lives of the children “I like Ramon and Mack, I like them both, and they are nice boys. I want them to do something with their lives.” She also wanted to develop their time management skills and responsibility attitudes “I am also getting the learners to manage their time efficiently from a young age. If you are under pressure and you do not complete properly and you get bad marks then it is your responsibility.” She was also aware of the effort, development and change that the learners were going through in themselves “Stav on the first day he just sat around and he did very little work. Now he gives in his work.”

Her perception was also informed by her experiences as a learner at school where “many teachers were horrible. My mathematics teacher was a real teacher; he explained well but was horrible to children.” Even though he was horrible she thought he was “the greatest math’s teacher.” Another great teacher “Afrikaans teacher was totally different - she was cool.” Her Biology teacher was also great because “you could ask him anything and he knew everything but the class was so boring.”

Carol’s perception of a facilitator of learning was: “A fun, cool teacher who was not boring but set the tone, who did not teach all the time, who knew everything and explained well, and was a motivating force in the children’s lives.” This perception was essentially similar to what she stated in cycle two step one – experiential reflections. This facilitation of learning at the school extended and affirmed her perception (Kolb, 1984; Kagan, 1984) of the role of a facilitator of learning.

- What was Carol’s perception and actual use of the contribution of the specialisation programme? Carol said that “it did more like help with the syllabus the stuff we did not know about.” She also shared the contribution in terms of “I explained to learners what they had to do, but I was also aware that Professor Ned had told us that we should not explain any theory to them, they must read the instructions and interpret them”. She also expressed her needs when she said “I do not know much about zoology and botany”. Because she was aware that as a facilitator of learning she needed to know more, the action that she took was “I now have to go and learn more.” She also compared her expectations with what she had gained “what we got was not what we expected at all, but it was not useless because we use some of it and it helps to develop overall.”

She said that it “developed us as teachers and not as biology teachers” as she was not learning Biology content (what she expected to do). Carol evaluated two sessions that were a huge contribution: “the one on substantive and syntactical” and “the theory and practice one.”

Carol, during the specialisation session on the assessment of learning experience expressed her frustration “I wanted a mark and the specialisation lecturer just gave me comments”. The importance of the quantitative over the qualitative is fore-grounded especially if this was what she always got after doing an activity during her schooling and tertiary life. Carol stated that an assessor should: “focus on

how the student teacher maintained learning”; “why learners loiter around the class (is it because they do not understand instructions or because they are lazy, do not want to do the task?)”; “look at the learner groups and to work out if everyone was busy (involved)”.

- What was Carol’s overall reflections of her first school based education programme and how did these reflections give meaning to her construction and use of “phronesis”.

Carol expressed her feelings about facilitating learning at the school when she said “I had a lot of ups and downs during those seven weeks. There were times that I really did not think I would be able to continue.” She also said “although it was a testing and trying time I did enjoy the first SBEP.”

Even though she found it to be a “very challenging and exhaustive time” she was aware of her gains and that “it was a great learning curve.” She described these gains more fully when she said that “the amount of knowledge I gained and experiences I encountered developed me as a facilitator of learning.” She declared that “there will never again be a situation I will learn more from, in such a short time. I definitely had my most challenging time.”

Carol’s perception of the role of a facilitator was extended “I learnt that a facilitator’s job is definitely not 7:00 to 14:00.” She described how during this school-based experience that “there was not one day that I got home and could do nothing, I burned the midnight oil more than once.”

Carol used her learning tasks as evidence for her professional growth when she said “my learning task design improved my confidence in presenting my learning tasks and my maintaining of learning improved.” Carol used a metaphor to describe her development as a facilitator of learning “when under pressure you must sink or swim. My head was sometimes just above the water, but I swam.” This really typifies the challenging experiences that she had but more importantly the type of person she needed to be to be able to swim.

Carol’s awareness of what she needed to improve on to be an excellent facilitator of learning focused on “I knew that my learning task could be improved on” and her management of learners’ discipline “my discipline and ‘consequences’ for my learners had to be of a higher standard.” She was aware that for her learning tasks to be excellent she needed to improve on “my real life problems as well as my clarity with which I presented the problem and the instruction to the learners.”

Carol concluded that in a “short amount of time I went from a ‘teacher’ to a beginner facilitator.”

6.6. Mack

6.6.1.A. Step 3: Planning Action – (Learning task 1)

During this school-based experience Mack designed and operationalised three learning tasks. The first learning task was on Classification, the second on the Kingdom Monera and the third on Human Sexual Reproduction. Mack presented the learning task on Monera.

6.6.1.1.A. Learning task design (See appendix for the learning task designed)

This learning task had the following features: learning outcomes, assessment standards, the problem, resources, class organization and time allocated.

6.6.2.A. Step 4: Taking Action (Learning task 1)

6.6.2.1.A. Learning task operationalised

Mack presented a learning task on the practical investigation of the Kingdom Monera. At the beginning of the initiating learning phase of the learning task Mack told the learners that they were at the South African center of microbiology (Lombardi, 2007; Slabbert & Hattingh, 2006) and that they were going to observe the agar plates that they had infected. Mack then proceeded to tell the learners that he had placed the plates in the fridge and explained why he did this. The learner groups observed their agar plates. They then designed the plan of the investigation and responded to the questions written in the worksheet.

6.6.2.2.A. Learning task assessment

a. Peer assessment

Mack's peer noted that the learning task presentation was concerned with "initiating learning and maintaining learning." In the initiating learning section she (Mack's peer) assessed the learning climate as "an attempt was made to make it pleasurable but it was irrelevant to the learning outcome." She noted that "the problem posed was relevant, challenging and urgent but lacked clarity." The learning management was assessed as "well organized for limited learner activities and there was little/some use of learning media, and other resources." She assessed the cooperative learning as "highly effective and successfully used." Learner involvement was such that "at times a few of them showed an interest." The time management "allowed for distraction and the focus was on individual learners' needs." The maintaining learning section was concerned with "the monitoring skills where Mack tended to give solutions". She managed feedback by "listening attentively and she gave recognition to the learners."

The general comments that his peer wrote about the learning task were: The development targets were concerned with the fact that Mack focused his attention on one side of the class, answered individual questions and some learners lost out on learning. His peer suggested that Mack should try to involve the whole class in the activities and if they did not respond then he needed to pick on them. His peer also suggested that Mack needed to have "more structure (organise himself better) so that he would not forget important resources for the learners."

b. Specialisation lecturer

The specialisation lecturer assessed Mack's as "you are projecting very strong and you are a very relaxed person". He also stated, "must congratulate you on the stuff given to the kids, it was excellent and you had all the basis from which you could have worked excellently". In assessing the maintenance of learning section of the learning task the specialisation lecturer wrote "took longer than it should have and the kids were clueless, they did not understand the investigation guidelines". He commented on the assessment of the learning activity, "I think that the whole idea for this learning task was really excellent and the assessment rubric was great". He also stated, "in future, although it takes time you will have to consider developing their skills of observing and recording." He commented on Mack's management of the learners, "did not spoon feed the learners". He questioned Mack's management of the learners, "what else in the learning process, apart from the individual, could the learner group develop and could the learners look at why is yours (bacterial growth) better than mine".

c. Researcher assessment

I assessed the initiating learning phase as rushed and the learners' understanding was not challenged. I thought that the introduction was a great stimulation but the learners' ideas were not questioned/elicited and then discussed. I suggested that Mack thinks about how he could use the introduction differently. I also suggested that Mack asks the learners to think about what they did and why they did it? I asked him if he noticed the learners' excitement when he asked them to move to their laboratory and if he noticed the learner interaction? I suggested that he lets the learners focus on the development of the report and he gives them time to read the instruction before he discusses what he expects from the learners.

6.6.3.A. Step 5: Reflecting on action and interpreting (Learning Task 1)

- **What** was Mack's understanding of the context of the school?

Mack thought that the school was a "pretty good school." Mack supported his judgement with "the students I teach, they're relaxed with things here and with the setting." Mack was generally a nervous person who lacked confidence and he was concerned with the learner's behaviour. But he was relieved that the learners in his class were "a tough class but can be very co-operative and well disciplined." He attributed this to the type of "school system" at this school.

- **What** was Mack's feeling about the learning task at the start of the school-based session and why did he have these feelings?

Mack stated that he was "looking forward to the school experience," but he did feel nervous about "what exactly I am going to facilitate and how I am going to go about it". His nervousness was associated with his lack of knowledge about the "what and how of the learning tasks" that he was to execute. He also stated that he "still did not have all my learning tasks worked out as yet". He was also worried that "the learning task investigation [that he had designed] was not going to be effective."

- **What was Mack's** understanding of practice theory and **how** was it constructed?

Mack stated, "I have a lot to develop on practice theory; how I am actually going to go about teaching or facilitating, as I see it as undeveloped". Mack said that he had tried "co-operative learning with the learners but he had found it tricky." He attributed this to "the uncertainty of a new experience and to learner discipline." He decided that he needed to work with the learners' discipline. One way of doing this was to change learners' positions in the class "swop learners from the front and put them at the back of the class." According to Mack "it worked well". He was aware that he had to consider learners' needs while facilitating learning. This awareness was developed from his interaction with learners in the classroom. He shared a case about Lou "who sits at the back, struggles to get going. I talked to him afterward about his work and now he is keen to start." Mack's action was self-rewarded in an emotional way (Hargreaves, 1998) as he "felt nice talking to him." But this action alluded to the larger action that Mack thought was essential when facilitating learning "I felt that it was important to get the learners to learn and be enthusiastic about learning". These features are expressed in the literature by Slabbert (2007), and Lombardi (2007).

Mack's construction of practice theory also focused on the learners developing science process skills and organisational aspects "they should have developed a hypothesis before the investigation and not after they have observed the results (bacterial growth on the agar plates)." It was also influenced by the theory of constructivist teaching and learning (von Glaserveld, 2001) as he stated "I should not give the learners answers; instead I should leave them with questions." He further stated "I could have left them with a question ... They could have then talked about it in their groups and it would have been best if during the learning task consolidation the class discussed". This social constructivist learning (Von Glaserfeld, 2001; Wortham, 2001) is essential for the learners learning.

Another organisational aspect that he needed to work on was providing complete clarity about what learners had to do. He then decided that in the future he will "set out my learning task presentation in a more structured and clearer manner, making sure to make it clear, important and urgent for the learners." He was also aware that he had not made the "learning task have any importance to the learner even though it does have a lot of real life significance" (Slabbert & Hattingh, 2006; Lombardi, 2007). He realised that this was due to him as "I merely failed to present it to them."

- **What** were Mack's feelings about the learning task operation and why did he have these feelings?

Mack stated that he felt nervous as "things went wrong", they did not go according to his plan. He also stated that he felt frustrated because the organisation of the activity took so long but that he did "eventually get the learning task going." These feelings were linked to his initiating learning of the learning experience.

- **What** challenges did Mack experience in designing and operating the learning task and **why** did he have these challenges?

Mack described how in the initiating learning of the learning experience he had “left the agar plates outside the classroom. I had to control the class and I had to fetch the plates outside”. He stated that at this point “I was confused as to what to do... and then my plan was lost.” Another challenge that he experienced was that he had presented the activity to the learners but he observed that they did not understand what to do. Because he wanted the learners to understand what they had to do “I went to each desk and explained what they had to do.” Even though this indicated a lack of organisation, Mack was aware of what he could have done to rectify it. He stated that “it may have been more productive to have a short introduction at the beginning of the class and then to provide them with the rubric which they could read through for five minutes.”

- **What** highlights did Mack experience in designing and operationalising the learning experience and **why** did he have these?

Mack stated that the highlights were that the learner “groups worked well ... nice to see this even though I was running around like a mad man.” Another highlight was that he had a chat with Louie (learner) and he (Louie) showed “such enthusiasm for the first time”. Mack’s highlights were linked to both organisational and learner behaviour aspects. Since Mack was concerned about learner discipline and progress, it is not surprising that the highlights focused on the learners.

- **What** were Mack’s expectations of the contribution of the teacher mentor towards constructing his practice theory?

Mack expected her to support him with his facilitation and the development of his practice theory. He stated that “I see them as giving feedback after your lesson. Can see where they think you are going wrong and you can decide on this and then obviously you can mould this into your practice theory.” He further stated that she could “inform me about all the things the department wants from classes like portfolios, etc.” and “support me with what learners need to learn and what I have to teach them-subject/content wise.” The interesting aspect is that he also saw her as helping him “when I’m troubled, how to deal with an unruly student within the school system.” This link with the “I” personal aspect is essentially important for his construction of his practice theory with particular reference to his role as a facilitator of learning and his identity as such (Zirkel, 2000; Brookfield, 1995).

- **How** does Mack perceive the actual contribution of the teacher mentor towards his construction of his practice theory?

Mack stated that on his first day at the school his expectations were not met as the teacher walked out of the classroom and was not there to give feedback. Mack had expectations about the teacher being in the class all the time while he was teaching. But he said “what I expected would happen, didn’t happen. He

realised though that this was actually a good thing for him as “I was given space to learn about things by myself” (Brookfield, 1995).

- **What** was Mack’s use of the contribution of the teacher mentor to his construction of his practice theory?

He was aware of the teacher’s actual contribution “in practice theory, incorporating things laid down by government, so you need to know how to incorporate this. She’s helped me there”. He further stated that she gave him a subject file with the sections that he had to teach and what she wanted the learners to know. He stated, “she could not have been more supportive, as she critted me and told me where I went wrong and how I could improve.”

Mack stated, “I think that it is definitely to our benefit that they are sort of critical of us”. He further stated, “I enjoyed her critting my lessons; stating what could be better, so that I could improve”. “I could use some of the suggestions that she made”.

- **What** was Mack’s expectation of the specialisation programme to his construction of his practice theory?

He expected to learn more about “how to teach sections of Biology.”

- **How** did Mack use the contribution of the specialisation programme to his construction of his practice theory?

Mack stated that he used all the things about how to design a learning task and how to facilitate learning as opposed to teaching that he got from the discussion sessions. Mack stated that he had used “his learning task lessons [that he designed in the laboratory] in facilitating learning in the school. He also stated that “professor gave good guidance with regard to the learning task presentations that we did”. Mack thought that these sessions were important as “we reflected on what we had done and on how we could improve them to make them more effective.” During these sessions he stated “we together looked at facilitating learning as opposed to teaching.”

6.6.1.B. Step 3: Planning Action (Learning task 2)–

Mack planned a learning task that focused on the Kingdom Monera

He presented this learning task to twenty five Grade 11 learners.

6.6.1.1.B. Learning experience design (See appendix - Copy of learning task 14 June)

This learning task had the learning outcomes for the relevant content areas, the assessment standards and problem statement. It also had the presentation of learning task features: clarity, importance and urgency, the learning task descriptive activities (learner), authentic learning context, time allocated, resources, assessment method, operation of learning task, description of occurrences during the lesson, learning task execution. Attached to the learning task was an assessment rubric for each group and an individual

assessment rubric...information (template) on the format for the report that the learners were expected to develop.

6.6.2.B. Step 4: Taking Action (Learning task 2)

6.6.2.1.B. *Learning task operationalised*

The problem that Mack gave to the learners during the initiating learning phase focused on the beer bellies that many men had and also what in beer makes you burp. This problem is relevant but not critically important for the lives of the learners (Slabbert and Hattingh, 2006; Lombardi, 2007). The co-operative learning focused on learner groups been given particular tasks and five minutes to brainstorm their understanding of their particular one and then to construct a mind map. Each group was then presented with one page of a reading based on their particular focus of the topic. The learner groups were given time to complete the task for the presentation. At the end of the class for the group presentations Mack either nominated someone from the group to present or the whole group decided on their own to present.

6.6.2.2.B. *Learning task assessment*

a. Researcher

I thought that the choice of problem and the use of the transparency with beer and yeast and the questioning about carbon dioxide in the beer – where does it come from etc. was appropriate and relevant. The management of the co-operative learning was effective and each group had a different task from the other group. I suggested that he write up the tasks on the chalkboard so that all the groups are aware of what the others are doing? I questioned his time management of the co-operative learning tasks - “you gave the learners time to brainstorm their task but it was too much time. Did you notice their behaviour?” .I praised him – “Your understanding and implementation of co-operative learning principle has really improved because you got all the learners to construct their own mind map – individual task” I asked him questions about his observations and awareness of the learners’ behaviours – “Did you notice the extent of the interaction in the learner groups? Every group was engrossed in the activity and did you notice how they organized themselves to do the presentation? They were wonderful.” I praised him for his design and implementation of the learning task group activities – “overall the learning task group activities were an excellent idea.”

6.6.3.B. Step 5: Reflecting on action and interpreting (Learning task 2)

- **What was Mack’s** understanding of practice theory and **how** was it constructed?

Mack understood his practice theory as “practice forms your theory and I am now using it.” He was aware that he had constructed his practice theory from his experiences of facilitating learning. He described how he “gave broad outlines for all the groups on what they should be looking at for the class presentation, but they could pretty much decide what they want to present.” He said that he did this as he wanted the learners to be “creative in their presentation” [and] ... too many guidelines would have limited them.” He became aware after observing the groups that “I could have given definite guidelines

for the brainstorming. This would have been more helpful and constructive for the learners.” He also became aware that “it helps a lot for learners in their groups to sit down and write something on paper” as this is the time when “they thought about it [and] they became interested.” Another example with group work is linked to his understanding of “where the whole meta-learning comes in where you work first with the individual – once they have established what they know and have something, then you work with the group” (Claxton, 1999). He was aware that “some people [learners] will have more content knowledge and more insight into the topic and ... will be able to teach the rest of the group ... they can share ideas” (Smith & Blake, 2005). Mack was aware that learners are constructors of meaning when he said “[the learners] construct the best understanding of the topic by putting ideas together, using the resources that they have (Slabbert, 2007).

Another experience focused on his awareness of the importance of his spatial position in the classroom in relation to that of the learners. He indicated this importance “I noticed that when you stand in a spot, half the class is not focused or is going wild [and] ... I have a tendency to stand next to the OHP and some learners don’t get involved and I tend to ignore them.” He became aware that “more interaction happens when I am not standing behind a desk or the OHP.” He shared how he was using his practice theory when he said “lately, I have been trying to move to the centre of the class.” He stated that “no one told me this, it comes with practice.”

Mack was aware of his choice of problem statement, when he said “I chose the example of bread and beer because this is more relevant to them” (Slabbert, 2007).

He was also aware of the importance of planning for a presentation and the crucial role that he needed to play in planning when he said, “I enjoyed the learning task ... because I planned something interesting for the learners”. He also realised the choice and use of appropriate resources “they [learners] did not get this [information] from the resources that they were using, as they [the resources] did not say clearly what lichens are.” He concluded that “it is important to pick suitable resources but it is difficult to find articles.”

- **What** were Mack’s feelings and perceptions about being a facilitator of learning and why did he have these?

Mack experienced mixed emotions “I am enjoying it. I am stressed at the moment ... I am a bit worried”. Mack had these mixed feelings due to the time demands that he felt as a facilitator “I do not know if I will get everything done” [work programme for the term]. Mack was amazed with himself - facilitating learning “I never knew that I could be like this – facilitating learning.” He perceived his professional development in a personal frame in saying “it was enjoyable ... the fact that you see yourself going somewhere, you see that you are developing.” He further stated “I see myself enjoying it as a facilitator, being capable and being able to develop as I go along.”

- **What** were Mack's feelings about designing and operationalising the learning tasks and why did he have these feelings?

Mack expressed his feelings by comparing how he felt after the first learning task and now when he said "I feel better than after the other learning task operations... I liked it." He attributed these feelings to the learners as "they seemed to be enthusiastic about what they were doing, they were not talking or bored, they were getting involved. In my other learning tasks they did not seem enthusiastic." Mack had received positive energy from the students and from himself "presenting was quite nice, I enjoyed it and I could see that it was working and it seemed like they learnt a lot".

- **What** challenges did Mack experience in designing and operating the learning task and **why** did he have these challenges?

His organisational planning for learner participation in group work was a challenge for him "to get everyone involved in the groups." But this challenge was reduced by the evidence that "most of the people in the groups were interested in the articles, talking about it and working out how to present it." He concluded that "time as a facilitator of learning is hard... for me what makes the learning task development easier – if you have something to work from". Mack was looking for lesson plans but he could not "find decent ones – lesson plans" that he could use, instead of designing them.

- **What** highlights did Mack experience and **why** did he have these?

Mack stated "the enthusiasm from the learners was a highlight and the fact that they were brainstorming when they were supposed to."

- **What** was Mack's expectation of the contribution of teacher mentor towards constructing his practice theory?

Mack stated that he still expected the teacher mentor to help him to function in the school system.

- **How** did Mack perceive the actual contribution of the teacher mentor towards the construction of his practice theory?

Mack stated that he required "help with what I should do with marks for tests and questions about tests" He said that the teacher mentor "helped me out with marks for tests and questions about tests ... how I could improve on the test memorandum ... advise about lessons ... problems with classes and noise levels."

- **What** was Mack's expectation of the specialisation programme to his construction of his practice theory?

Mack stated that he specifically wanted information on "where I could get biology resources." Here he was referring specifically to specimens.

- **What** was Mack's experience of the contribution of the specialisation programme to his "phronesis"?

Mack stated that "I am constantly growing on ideas from the specialisation programme. We work on how we can better the factors in our lives and shape them to our personality." He described how he constructed his practice theory of assessment criteria for assessing a learning task. He said "to maintain learning you need to ask the learners questions so that you can improve the quality of their learning; bring in a criterion like, are they talking to each other about it". He stated that another criterion for maintaining learning is that the initial instruction must be clearly understood by the learners as, "when the initial instructions were not clear the learners loitered around". A further learning task assessment criterion should be on how the facilitator of learning "managed the time." Mack stated that to get the learners to complete a task and not take their own time you "need to state the urgency (Slabbert, 2007) about it, it needs to be done now". Mack further stated that time management could be effective if, "learners are left to explain to one another in their groups and in so doing they could come up with their own understanding" which is the focus of meta-learning.

He also constructed his practice theory of how to manage discipline. He stated that "when the facilitator shouts at the learners and they are still left to carry on, the message that they are getting is that they can carry on misbehaving." He decided that "when the learners are unruly you have to take charge and be an authority person".

Mack had observed a video of himself facilitating a learning task and he assessed it as "you can improve". He was aware that he could improve on his time management, initiating learning instructions and managing learner discipline.

- What was Mack's overall reflections of her first school based education programme and how did these reflections give meaning to her construction and use of "phronesis"?

Mack expressed his feelings about facilitating learning at the school when he said "it was an enjoyable and frustrating time." Mack stated that he had learnt a lot about himself and also about facilitating learning. He also said "I developed more as a person ... felt less nervous ... started enjoying facilitating learning."

He became aware of his progress "I could see that it was working and it seemed like they [learners] learnt a lot". This awareness was based on his practice of operationalising the learning experience, the inputs from the teacher mentor and the specialisation lecturer. He stated that in operationalising the learning tasks "in the past I had problems with bringing clarity and what they're supposed to do". He was aware of his weaknesses and also what action he needed to do "I know that I could have written it on an overhead".

Mack attributed some of his progress to the "positive energy from the students". He stated that "in my other learning tasks they did not seem enthusiastic". He was more relaxed now when working with learners. He had constructed his practice theory of how to work with learner discipline and group work

“the learning experiences and activities for the learners were more organized and things went more to plan.”

Mack’s perception of the role of a facilitator was extensively constructed. He had perceived what was required of a facilitator of learning e.g. with “time management ... learner organization”. Mack was amazed with himself as a facilitator of learning “I never knew that I could be like this – facilitating.”

6.7. Step 6: Evaluating Action

6.7.1. Comments - analysis and evaluation of the intervention

Each student teacher’s experience of each step in this cycle was essential to their construction and use of his/her practice theory. This construction and use was evident from the exploration of each student teacher’s understanding of the meaning of practice theory and its’ construction and use. This construction and use of practice theory was also evident from the student teacher’s designed learning tasks, operationalisation of learning tasks, facilitation of learning, expectations, perceptions and use of the contributions of the teacher mentor and the specialisation sessions, and the nature and content of his/her reflections.

The student teachers constructed their practice theories from in Bernice’s words

“her operationalisation [of learning tasks], assessment and reflections” and “learnt from the learners’ response”; in Carol’s words “the experience at the schools” and Mack “experiences of facilitating learning”. These practice theories were not transmitted from a specialisation lecturer to the student teachers as referred to in the literature by Von Glaserfeld (1984) and Korthagen (2001). These practice theories were self-constructed by each student teacher.

The use of the word I by each student teacher when talking about how they constructed their practice theories clearly supports this claim of self-construction. Evidence for this is seen in the statements by each of the student teachers: Mack stated “I merely failed to present it to them”, Carol “I am equipped” and Bernice “I am not giving them notes”. The common denominator for the self-construction of practice theory was for each student teacher to facilitate learning in an actual classroom, an authentic context.

Furthermore, Bernice, Carol and Mack were aware of what they needed to do to further construct their practice theory. This awareness was informed from their practice of facilitating learning. As Carol stated “I know that next time I am equipped to handle it the right way”. Student teachers could also identify the problem areas; give reasons for why they experienced these problems and what they needed to do to improve in operationalising their learning experiences.

The practice theories comprised both cognitive and perceptual knowledge. While Bernice and Carol’s practice theory focused on the learners’ actions “could answer questions for themselves” (Bernice, 2004); co-operative learning and group work, Mack’s focused on learners’ needs, developing science

process skills in learners and organizational aspects. The practice theories of all three student teachers focused on I (each student teacher) as well. While Bernice's theory focused on procedural aspects in an unemotional manner, Carol's theories focused on her actions of interacting with learners in an emotional manner. One of Mack's organisational aspects focused on his spatial position in the classroom in relation to the learners. He was aware that the distance between him and the learners impacted negatively on how he could manage discipline and also keep the learner's attention as intimated in the literature by Saunders (1992). Korthagen (2001) reminds us that practice improves due to the perceptual knowledge that is constructed.

Bernice, Carol and Mack's feelings about facilitating learning impacted on their construction of their practice theory. This impact of emotions on learning is stated in the literature by Hargreaves (1998). Feelings of uncertainty as expressed by Mack were linked to "what exactly I am going to facilitate and how I am going to go about it (facilitate the learning tasks)". The student teachers' feelings that they experienced were also linked to how learners responded "they are quite excited about what the surprise is and now I am excited" (Bernice) and in Carol's words "I was disappointed, I expected more of them [from the learners]. The student teacher's feelings were in waves of despair and elation. But these waves were in constant motion and at different levels at different times. The crest of despair was initially very high and the ebb of elation was low. After facilitating learning during the school-based session the crest of elation for all three student teachers was higher than the ebb of despair or frustration that they experienced at the beginning of the school based session.

The student teacher's feelings impacted on their beliefs about teaching and learning. This relationship is discussed in the literature by Korthagen (2001b). This was evident from comparing the statements that they made after facilitating learning of their first and their last learning task for the school-based session. Bernice was concerned with "how to get them [learners] started properly." She then believed and acted on what she needed to do as the "learners just started the work". Mack's beliefs about group work were challenged in that he did not understand how to get them participating in the group. His belief about what to do was perceived when the learners in their groups "were brainstorming". Carol's beliefs were that the "skepticism ... about this new paradigm was soaring and I was sure that it would never work". She then realised that "this new paradigm in education is not absurd as I thought." These beliefs depended on the student teachers using inner wisdom and authority as suggested by Ray (1999). Bernice, Carol and Mack's beliefs played a crucial role in promoting their paradigmatic shift (Slabbert, 2007). But this shift was possible **ONLY** due to the student teachers being placed in new, challenging situations where they risked these new unknown practices and created the reality of their belief. This type of shift has been described in the literature by de Kock & Slabbert (2004). In these encounters with practice the student teachers adopted the "belief initiated mental model" which is described by de Kock & Slabbert, (2004) in the literature chapter.

The beliefs that Bernice, Carol and Mack had were enhanced by their reflections. It was through reflecting that each of the student teachers could share their beliefs and experiences (practice) of facilitating learning. What was significant was that in the process of reflecting the student teachers were also constructing knowledge about how and when to reflect. Carol shared that she “did not know what to do, I just guessed”. But it was from this action and then reflecting on how they reflected (the practice of reflecting) that they were enabled to construct and use their particular reflections to construct their “phronesis” of and for facilitating learning. In this enabling reflective learning process each student teacher was learning how to reflect and also how to facilitate learning.

The student teachers experienced the reflective learning process in solitary and social settings. In both these settings they reflected on their feelings, actions and thoughts about facilitating learning. During these reflection sessions each student teacher gave meaning to his/her understanding of: who I am as a person (identity) and what is my role of and professional identity of being a Facilitator of Learning? It was during the social reflection sessions that the student teachers first realised and experienced relief from intense negative emotions and the essential construction of self-confidence. This value of togetherness in frustration for learning alludes to the social learning that was essentially necessary for each student teacher’s construction of “phronesis”. This value of togetherness in frustration for learning prompted the student teachers to organise meetings outside of the specialisation meeting times. A reason that Mack gave for why they met was “we on our own would meet to share our concerns and discuss our progress.” These meetings gave the student teachers space to share and value themselves as individuals, Facilitators of Learning and provide co-operative support. Even though in Carol’s words the meetings were “not very constructive as it was just a moaning session” they were critical for the student teachers to develop as persons. It was during these meetings that they “spoke about our frustrations and the difficulties that we were experiencing” And in Bernice’s words “I valued it [the meetings]”. So, during these meetings the student teachers were crucial co-operative support for one another. These social settings where togetherness in frustration for learning transpired were essential for the student teachers construction of a practice theory of and for facilitating learning.

The teacher mentors also contributed to the student teacher’s “phronesis” But each of the student teachers had different expectations of their respective teacher mentors. While at the beginning of the school-based session Bernice expected her teacher mentor to support her by answering her questions, Carol expected support with her “learning task design presentation, consolidation and feed-back.” Bernice and Carol thought that their teacher mentors ought to be competent to provide this support as they had completed the PGCE programme a year earlier. Mack on the other hand expected support with both substantive and syntactical features of his facilitating learning, including learner discipline. Even though his teacher had not completed the PGCE programme she had attended the mentor workshops. Furthermore, Mack’s anxiety and his insecurity with his lack of knowledge and confidence with “what and how of the learning tasks” impacted on his extensive support expectation. But after the student

teachers had facilitated learning of Life Sciences for an extended period their expectations of their respective teacher mentors was reduced. Mack at this time only expected support with “function[ing] in the school system.”

The student teachers were also aware of their perceptions and use of their respective teacher mentors’ actual contribution to their construction of their particular practice theories. But even though Bernice was happy with her mentor’s support she only used her (the teacher mentor’s) learning task design ideas and her disciplinary measures. Carol was “confused” by her mentor’s assessment of her learning task operationalisation and thought that her practice theory was not influenced by her (teacher mentor). What Carol did perceive though is that her mentor cared for the learners and had her own practice theory. Mack experienced a revelation that the absence of the mentor from the classroom gave him “space to learn about things by myself”. But he had used the support and guidelines that she had provided. Even though she was “sort of critical” of his lessons he valued her constructive suggestions and the spirit in which it was done. Clearly the expectations and the actual contributions of the teacher mentors to each student teacher’s construction of their practice theory was different.

The contribution of the specialisation programme was in terms of the syntactical aspects as expressed by Bernice “administration stuff, not really with content and context stuff.” This programme was not in accordance with Mack’s expectation of learning about “how to teach sections of Biology” and Carol’s “what we got was not what we expected at all”. Even though Bernice perceived it as not having “contributed a lot ... as it was not practical” to implement she did learn how to assess her practice of facilitating learning. Carol on the otherhand perceived it as “not useless because we use some of it and it helps to develop overall.” Carol had also internalised (Korthagen, 2001) her experiences of the specialisation discussions as she was “aware that Professor Ned had told us that we should not explain any theory to them [the learners], they must read the instructions and interpret them”. She also realised that she needed to know more about particular content areas and she took the necessary action “go and learn more” to achieve this. This focus on taking responsibility for her own construction of “phronesis” was essential for Carol. Mack attributed his construction of “phronesis” to the theory and action that was shared during the sessions about facilitating learning. He came to realise what changes he had to make for him to facilitate learning effectively. He valued the contribution and focus of the specialisation programme “how we can better the factors in our lives and shape them to our personality.” And most importantly he was aware of his gains “I am constantly growing on ideas”.

Each student teacher actively participated in the interventions and constructed their particular practice theory. They were experiencing a transformation in their feelings, beliefs and practice of facilitating learning. These transformations impacted on the student teachers’ construction and use of belief-initiated mental models.



6.7.2. What feeds into the next cycle?

Bernice, Carol and Mack's experiences of the first school based session could be used as a baseline for their further construction and use of their particular practice theories/"phronesis". Each Student teacher was experiencing the construction of the belief-initiated mental model. It was imperative that the student teachers experience further facilitation of learning Life Sciences in particular school contexts to affirm and further construct their mental models and ultimately their "phronesis".

Descriptive data – section II – cycle four

7.2. Step 1: Experiential reflections

7.2.1. Bernice

7.2.1.1. *Observation of the teacher mentor at the second school*

She said that the teacher mentor from the second session was “different in her teaching approach and her discipline was bad.” Bernice described the teachers’ actions as “spoiling the learners”.

7.2.1.2. *Understanding of the level (standard) of work for learners and the context of the school*

Bernice stated that the learners at her second school were used to people going down to their level, and “they are fed everything because the teachers think that they are not capable”. Bernice decided that she was going to get the learners to do extra. She was aware that she needed to “boost the learners’ confidence” to get them to want to participate and perform.

7.2.1.3. *Understanding of her progress*

Bernice thought that her progress now at the beginning of the second session was already better compared to the first session when she “felt like she was nowhere.” She gave an example of her progress now as “the assessment is much better because my first assessment stuff was kind of don’t know how to, where to”. She also stated that seeing as she was doing the same type of learning tasks, she knew what was expected of her and she could “see how the facilitation of learning could happen better.” She also stated that she had “time to ask them the clarifying questions and actually see the result of what it does” (Senge, 2006).

7.2.2. Carol

7.2.2.1. *Observation of the teacher mentor at the second school*

Carol stated that she had not observed her teacher mentor teaching and could not report on this. She did state though that he “seemed to have old ideas of teaching”. She made this statement based on her observation of his planning documents.

7.2.2.2. *Understanding of the level (standard) of work for learners and the context of the school*

Carol evaluated the “standard of work at the school as low.” She stated that the learners at the second school “did not want to do much work ... but this was due to the teacher, who only gave them a little work.” She said “I can’t handle that anymore because each period they tell me that we do too much, we work too hard”. Carol realised from the learners’ performance in the learning tasks at both the first and second school that her standards were too high. She was aware that she expected too much from the learners and that in order for her to construct an understanding about the performance level of learners in grade 10 it “would have to come from experience and a talk to my mentor, he can help.”

7.2.2.3. Understanding of her progress

Carol stated that her organisation now was better because she knew what she had done in the first session. She recognized that she could now improve on her organisation. She was aware that this improvement was possible and that she could build on it because “she was facilitating similar learning tasks to that of the first session.”

7.2.3. Mack

7.2.3.1. Observation of the teacher mentor at the second school

Mack said that his present teacher mentor “is brilliant; she must be one of the best mentors”. But he found it “easier in my first SBEP [school-based education programme] where the teacher mentor knows how much she wants done in that certain period”. He felt that with greater time guidelines from the mentor “if she was very specific- two weeks for this, one week for that” it would have been easier for him to write up a timetable.

7.2.3.2. Understanding of the level (standard) of work for learners and the context of the school

Mack stated that a facilitator’s standards “could never be too high but you had to be careful not to go over the heads of learners.” He did think though that many teachers expect too little from the learners, which he felt was totally wrong. He supported this thinking by saying “just the stuff that I have seen them produce all by themselves. I got them working and many of them produced superb work. They taught me some stuff, which I did not know and that was great”. Mack realised that learners operate at varying levels and a facilitator of learning needs “to provide an activity to cater for students (learners) that maybe are not academically so strong.”

Mack stated that what he realised was that there was a totally different work ethic with the children at his second school. According to him this was due to “a lot is expected of the kids and therefore they perform.” He gave the example of when he gave the learners a task where he “did not suggest a power point presentation; it was really their initiative that they did it all.” Mack thought that this response would not have happened at his first school and the learners there would not have had such good presentations. He associated the learners’ performance to the type of school and not due to himself when he said “they have a very high academic standard here in them. To a large extent it’s not really myself. I don’t see that as me who made it all happen”.

7.2.3.3. Understanding of his progress

Mack stated that it was going well. He also said, “Facilitating learning would be great if we could have a teaching assistant to do all the marking for us”. He thought that this second session of facilitating learning that he was to experience would be a bit more exciting than his first one but he did feel a lot of stress due to his slow pace (leaving a lot of content out of the lesson because time is up). He said “we have been very busy, but it does not seem like we got through the content that we should have today.

When Mack thought about his own progress he stated “I realise now that there is still a lot that I can improve on and that I am probably not going to improve on before the end of this session that will always be something I need to do”.

7.3. Step 2: Reflecting and interpreting

- What was the role of the teacher-educator in the discussion-group interview during the experiential reflective step of the cycle and why did he have this role?

Professor Ned provided the context for the session and he asked the students to share their reflections with respect to their experience at the placement school. As the student teachers shared their reflections he challenged them to dig deeper and to share at a meta-cognitive level what and why they had the particular concrete experiences at the placement school. He challenged them to use their constructed “phronesis” to give meaning to the concrete experiences that they had at the placement school. He expected them to make decisions about how they would facilitate learning in the particular placement school contexts that they had experienced. Since this interaction between the specialisation lecturer and the student teachers was later in the year he did not have to prompt the student teachers to share their reflections. During these sessions the specialisation lecturer did not *project a power* relationship in the communication interaction in that the student teachers dominated the discussion when sharing their reflections. There was no reason for the specialisation lecturer to dominate the interaction as the student teachers were comfortable and practiced with sharing their reflections.

The role of the specialisation lecturer was to facilitate the social interaction, the exploration and the meaning making process of the student teachers’ reflections.

- What was the student teachers’ participation in the group discussions?

All the student teachers participated as each was expected by the specialisation lecturer to share their reflections of their concrete experiences at the placement school. All three students were relaxed and comfortable with sharing their thoughts, actions and feelings that they had experienced. A sense of safety and trust had developed among them, also with Professor Ned. This safety and trust relationship is coupled with the fact that the student teachers were developing in confidence and knowledge about what they expected of themselves and the positive feedback that they received from their own actions.

- What were the student teachers’ reflections on the utilisation of their practice theory as an assessment tool for observing teacher mentors teaching at a placement school?

The student teachers were comfortable with assessing the teacher mentor’s teaching. They were pleased with the action of being able to assess the lesson and project their role in facilitating learning as much more than what the teachers were doing in the classroom. The student teachers were unhappy and

frustrated with observing how the teachers taught as they did not challenge the learners instead they were spoiling the learners (Bernice, 2004).

- What was the student teachers' awareness and assessment of their progress with regard to facilitating learning in practice?

As the student teachers used their practice theory to assess the teachers' teaching they became more aware of the nature and content of their practice theory. They saw this as a good learning experience.

7.4. Bernice, 7.5. Carol and 7.6. Mack

Step 3, 4 and 5 for each of the student teachers is presented in this section.

Steps 3 and 4 were concerned with the planning and taking action for the intervention on each student teacher's construction and use of "phronesis". Three interventions were planned over different time periods: one and two from weeks twenty to twenty-nine and three in week thirty-nine. Intervention one focused on how each student teacher designed and operationalised Life Sciences Learning Tasks at the school. The purpose for this intervention was for each student teacher to further construct and use his/her "phronesis" of facilitating learning. Intervention two which was planned by Professor Ned (specialisation lecturer) focused on the specialisation discussion sessions that the student teachers participated in at the university. The purpose of this intervention was two-fold: (1) for each student teacher to challenge and further construct his/her "phronesis" of facilitating learning (2) to become aware of his/her own identity as a person (De Kock & Slabbert, 2000). To achieve the first purpose each student teacher and Professor Ned viewed and discussed Mack's learning task on the Heart and Bernice's learning task on Genetics. The rationale for doing this was stated by Professor Ned when he said "What I would like to do is to look at what happened". The student teachers were given the learning task assessment form that the teacher mentor, specialisation lecturer, researcher and their peers had used to assess them. The specialisation lecturer prepared them for the activity by saying "we are going to really dig into those criteria and say to ourselves - what is it that was happening there and what is it that really needs to be improved?" Professor Ned shared an important aspect with the student teachers when he said "the point is not to discredit you. The point is: do I recognise this and do I see something I didn't realise". So, the purpose of this specialisation session was to observe the recorded learning task operations for Bernice and Mack; assess them and to make suggestions about how to improve them. To achieve the second purpose each student teacher completed a short paragraph on who am I (an identity description) and the Personal Profile Questionnaires: Neethling Personal Skills Instrument, Temperament Inventory and a Self Image Evaluation. Intervention three focused on the Professional Portfolio that each student teacher was expected to compile and then present during the Portfolio Defense Presentation at the end of the programme. Each student teacher was expected to carefully select work done, which could be used to represent his/her development from the beginning to the end of the programme and to compile this in a portfolio – Professional Portfolio. In short each student teacher had

to select work that represented his/her professional competence. These selected pieces of work were to be supported by substantial and meaningful reflections from each student teacher (Slabbert, 2004). Each student teacher then presented this portfolio during the Portfolio Defense Presentation at the university. Step 5 focused on each student teacher's reflections on the interventions. The analysed data is presented on pages 300 to 342.

7.4. Bernice

7.4.1. Step 3: Planning Action -

7.4.1.1. Learning task design (See Appendix for a copy of the learning task designed).

Bernice was based at a High School from the 19 July to 3 September. During this time she facilitated two learning tasks: one on Genetics and one on the Blood circulatory system. The planned learning task section used for this research was on blood transfusion. It was designed for a period of two 40 minute sessions for Grade 11 learners. This learning task had the following features: learning outcomes and assessment standards, problem put to learners, time allocation, learning task preparation, class organisation, authentic learning conditions, resources, final results of the learning task, methods of assessment, process followed to solve the problem, final product outcome. The problem planned was: We are all aware of the increasing danger of the transmission of HIV/AIDS, as well as other blood related diseases. Your task as a group is to find a solution, to the best of your ability and of the highest quality, to the problem associated with the transmission of HIV during blood transfusions. How will you ensure that you get uncontaminated blood? On your own, think about the best solution. This will be followed by an opportunity to share your ideas in groups; select the best idea and develop it fully.

7.4.1.2. Specialisation session

Planned by Professor Ned

7.4.1.3. Planning the Portfolio for the Portfolio Presentation Defense

Bernice stated that she planned for her portfolio defense by compiling a portfolio which reflected her love for horses and the fact that she was "an equestrian rider". Bernice stated that her "professional development as a facilitator of learning may be compared to my development as an equestrian". In her portfolio she used metaphors of: man meets horse, mount up and upgrade. She used the metaphor of Man meets horse to represent her initial experiences of the PGCE. She used the metaphor of mount up to represent her development as a facilitator of learning during the PGCE. The metaphor of Upgrade was used to represent her final outcome as a facilitator of learning. She stated that her reason for planning the portfolio was to demonstrate her professional development during the year with regard to her role as a facilitator of learning.

7.4.2. Step 4: Taking action

7.4.2.1. Learning task

a. Learning task operationalised

During the initiating learning phase the problem was presented to the learner groups and they were given ten minutes to work this out. They worked this out individually and they then discussed their ideas in a group setting. A transparency with various blood diseases were presented to the learners. The learners asked a number of questions seeking clarity about the activity and Bernice patiently responded to them. She convinced the learners to work on their own ideas. Each individual worked quietly on his/her task and Bernice moved from group to group asking questions and providing support to the learners.

b. Learning task assessment (see appendix for a copy of the reports)

The learning experience was assessed by the specialisation lecturer and the researcher

(i) Specialisation lecturer

He assessed the learning task challenge as excellent. The learning task presentation was assessed as clear, explicated importance, emphasised urgency and demanded immediate learner action. He assessed the meta-learning, co-operative learning and facilitation as good and the consolidation was inadequate.

(ii) Researcher

I assessed the learning task challenge as excellent. I also assessed the learning task presentation as clear, explicated importance and emphasised urgency. I assessed the meta-learning, co-operative learning, facilitation and consolidation as good.

I praised Bernice for the problem presented as I thought that it was great, relevant and personal. I suggested to her that she could have asked the learners if they had experienced any relatives or friends dying from mismanaged blood donations. I told her that the individual task was a good idea and that it was important that each learner thinks about the problem and writes down his/her ideas. I assessed the group session as good and I advised her to work on managing her time and the group outputs effectively. I challenged her to think about the following questions: what about the Biological aspects and regulations linked to drawing blood and storing it, what is the link between HIV/AIDS and blood grouping and did you consider looking at blood groupings as well not just clean blood? I suggested that she includes a general group discussion as this would really place a cap on this experience. I ended off by praising her for her wonderful innovative ideas.

7.4.2.2. Specialisation sessions

a. Observation of Mack and Bernice's video

When Bernice observed Mack's operationalising the learning task she noted that the learners were chaotic even though he had given them instructions for them to conduct the practical investigation on the heart, and they knew what to do and were ready to dissect the heart, they were distracted by Mack "pointing to the lungs" and talking about them. This made her realise how she could distract the learners. When Bernice observed her own video on her operationalising her learning task on Genetics she became

aware of the importance of accuracy of information. Professor Ned challenged her to think about her inaccurate use of genetic terms to indicate genotypes as evidenced in the following exchange during the specialisation session:

Specialisation lecturer: Which colour is dominant?

Bernice: Which colour is dominant? Brown is dominant

Specialisation lecturer: What is the danger of simply saying, brown is dominant? I'm talking [about] scientific rigidity?

Bernice used the evidence of many more people in the public having Brown eyes as a reason for dominance. She was working with the phenotype – Brown eyes. She was not aware of the complexity and the detail with regard to the heterozygous genotypes the possible combinations that indicate dominance.

b. Identity description (Who am I?)

The very first thing about me you should realise is that I am mad about horses!

I am an introvert, but am usually able to conceal this quite well. I manage this by using my stable sense of self worth, self-confidence and spontaneity. I generally am a friendly person who laughs often. The only time I become angry is when my time is wasted. I do not trust people easily, but I manage to hide this quite well! Therefore I would rather be alone than amongst other people. Although I love working with people, I would rather be amongst animals or in the outdoors- if only you could make a living out of this! My fears? Easy, the same as those of a horse! I suffer from claustrophobia, am tactile sensitive and have an enormous personal space. I am a lively person and love the rat race. I stress if I have nothing to do or nowhere to go! I believe: The more I have to do, the more I am able to do!

c.. Interpretation of Personal Profile questionnaires

(i) Bernice's scores on the Neethling Personal Skills Instrument were L1:80; L2:70; R1:85; R2:65. According to these scores Bernice's L1 and R1 were not very far apart and she has a high preference for both. Bernice functions as a right brained person but the left brained score is not very small. According to the analysis scoring sheet for the instrument, Bernice is a person who searches for alternatives, prefers the big picture, not the detail, idea-intuition, strategy, synthesis, integration, risk, restless, becomes bored quickly, experimenting, diversity, comfortable with chaos, fantasy, surprise, association. The teaching preferences for a person with Bernice's score is – the R1 trainer/teacher usually gives a holistic view of the lesson and prefers to link it to other subjects and point out how it applies to the “real world”. Bernice is the type of teacher who will encourage spontaneous participation and create opportunities to experiment. Bernice considers visual aids an important part of the lesson. Her lessons could be unstructured, with her deciding on different content, etc. on the spur of the moment. She will create opportunities to speculate, to strategise and discover new things. She is a teacher who includes a fun

element in parts of her lesson. Her administrative duties, deadlines and thoroughness could sometimes be lacking.

(ii) Bernice's score for the Temperament Indicator indicated that she is an Influential Choleric (outwardly forceful) person who is outgoing and task-oriented.

(iii) Bernice's score for the Self-Image Evaluation (58) indicates that she has a dissatisfied self image.

7.4.2.3. *Presenting the Portfolio at the Portfolio Defense*

During her presentation Bernice stated that "the most amazing thing for me that I learnt is that I can facilitate learners and a traditional lesson is so incredibly boring." She saw her role as that of a facilitator of learning when she is at a school. She did not see her role as a teacher where "I go out next year saying to the learners that they must take out a book and write this in your book." She saw her learners as not been bored and "they will learn so much more."

Bernice described the construction of her practice theory at the beginning of the programme as "where you get theory in a book" and later during the second school based education as "I started thinking that developing practice theory is not so difficult." She was of the belief that "practice theory without a foundation" could not be constructed. She thought that the interventions that she had experienced during the programme were crucial for her construction of her practice theory when she stated that "you cannot leave someone to do something totally on their own".

Her frustration that she experienced in the programme is related to the schools. She described the problem that she experienced when she said "in the schools we do not see the things that we learn about at university, we do not see it at all at the school." She expressed her gains from the programme "personally, from the PGCE I have learnt to work with different people with different personalities."

7.4.3. Step 5: Reflecting on action and interpreting

- **What was** Bernice's understanding of practice theory and **how** was it constructed?

Bernice thought that practice theory was "your basic learning." She constructed her practice theory from different experiences. She described how she "tried her best to make the lesson as interesting as possible **and to challenge them [the learners]**". This action links to her being a task-oriented person as indicated by the Temperament Indicator. She described how to do her best that she **had to** "read up on the topic and prepare carefully – this reminded me of the role of: Scholar, researcher and lifelong learner)." She also posed "**many meta-cognitive questions to get the learners thinking**, rather than spoon feed them." This action of getting learners to think paid off as the "learners are **actively involved with meta-cognition**. I am starting to enjoy this." As a result of this experience Bernice had now "**become more confident in posing meta-cognitive questions**." She described how as she "engaged with this learning task, I was able to distinguish quite effectively between meta-cognition and thereafter co-operative learning (this assists me in the development of my practice theory)." This realisation came with her

thinking that “if implemented properly [co-operative learning], learners learn more from each other’s opinions than when weaker learners simply agree with stronger learners without expressing an opinion.” She became aware that “successful management of meta-cognition, followed by co-operative learning ensures the acquisition of appropriate life skills.” She described how she was now using this technique in the classroom when she said “**at the end of each lesson I allow time for consolidation,**” “in future I’ll change the groups. At the moment learners decide who will be part of each group,” “I am going to force four learners to form two groups of two each, to ensure that they do some work themselves.” Bernice also realised “the importance of **being prepared.** (Preparation falls under the role of: Interpreter and Designer of Learning Programmes)” This realisation of being prepared was important and necessary for her as due to the type of teacher she is, her lessons could be unstructured, with her deciding on different content, etc. on the spur of the moment (Neethling Personal Skills Instrument). Bernice also realised that “**a good educator must be able to improvise!** (When it becomes necessary to change direction on the spur of the moment, this covers: the role of Learning Area/ Discipline/ phase specialist. This should ensure that I am never caught unawares).” Bernice should be able to improvise quite comfortably seeing that she saw herself as a person who has “self –confidence and spontaneity.”

Bernice learnt about what “would challenge learners or put them off.” She said that “you have so much to do with so many different people, you start thinking when I plan it this way will this get learners to work with it, will it interest so and so, the clever ones as well” Bernice stated that she had “learnt a lot from working with the children and I also learnt a lot from them.” She found out that “when I was in front of the class, the two way interaction is important.” This led her to “**realise that learners are very involved if they participate in something that applies to their lives.**” **Bernice concluded by saying that she “got more ideas from facilitating learning... makes you become a more creative person - a creative thinker.”**

- **What** were Bernice’s feelings about the learning task operation and why did she have these feelings?

Bernice felt pleased that “it went alright.” The evidence that she gave for this was that “all the learners, except the two in the front, were working, even the ones that never work ... the meta-learning went well.” She was also pleased with her choice of problem as it concerns all of us and “the learners realised it was a real life problem and they were aware of the whole AIDS thing.” Her feelings with her choice of problem are also linked to the fact that she is a teacher who points out how the lesson applies to the “real world” (Neethling Personal Skills Instrument) and being able to do this was also where her pleasure possibly came from as well.

- **What** challenges did Bernice experience when designing and operationalising her learning task and **why** did she have these challenges?

Her first challenge in designing the learning task was thinking about ideas on what to do. She grappled with this for some time as she said “the idea to do this came to me when I was in bed just last night. If I

could have come up with it last week”. She also expressed the impact that the late formulation of the ideas had on her planning when she said “it (lesson) would have been perfectly planned concerning the resources and the problem.” She was aware that she “could have said the problem in a different way” given the time to do so.

In regard to operationalising the learning task, Bernice thought that her learning task was “quite straightforward” for the learners to understand. The evidence she gave was that “the problem statement was clear and simple, one that most people must have wondered about these days.” She stated that in presenting the learning task she took into account her knowledge of facilitating learning and she “attempted to meet all the requirements of a good learning task presentation (LTP) as specified in the Study Manual for Facilitating Learning (Slabbert, 2004, p. 16).” She also said that she tried to present what she had planned in her LTP “as clearly as possible.” She was aware that her challenge was that “I did not though make any allowance for meta-cognition.” She was aware of what she needed to do but did not put it into practice as evidenced by “this is in conflict with my practice theory. I did however; rectify this in the next learning task that I have designed.”

Bernice expressed what still challenges her “I do not believe that I have perfected the problem statement, learning task design or learning task presentation” She was aware that doing it more will help her to improve. She used a metaphor to describe this learning “after four years of show horse riding, I still fall off now and then! One is never too old to learn and experience comes with time.”

- **What** highlights did Bernice experience when designing and operationalising her learning task and **why** did she have these?

Bernice expressed her excitement and amazement with the learners. She said that “by now learners are used to the fact that they are expected to THINK! Everyone immediately got stuck into the problem.” She was amazed by Amaol (a learner who had experienced discipline problems) “as he had the right answer. I thought that was impossible.”

- **How** did Bernice perceive the actual contribution of the teacher mentor towards her construction of her practice theory and why did she perceive this contribution in this way?

Bernice stated that her teacher mentor described her as a person who has “patience and that I am winning the difficult learners over (community, citizenship and pastoral role).” This positive feedback made her feel good. This positive feedback also came from Bernice observing that the “learners enjoyed my classes more than hers.” Bernice expressed that she had not learnt so much from my mentor.” She stated “my mentor was not good with the learners and I learnt how not to behave with the learners.” She described her as a “monster with the learners... it is punishment for me to sit in the class and observe her yelling at the learners.”

Bernice had experienced difficulties at the school in that the teacher mentor would “inform me at such a late stage of the day’s programme to take a lesson” and that some teachers “are making it very difficult for me to present a learning task”.

- **What** was Bernice’s understanding of the role of a facilitator of learning and how did she construct this?

Bernice believed that “patience is a very important characteristic of a good educator (this characteristic is encapsulated in the role of: Learning mediator).” She said that “I enjoy teaching and I love the kids. I worked with Grade 11 learners and I got them to” do different things. She also said that when working with co-operative learning “I was moving from group to group and listening to ideas, prompting learners to share and setting an open, relaxed atmosphere.” She was aware of what she had to do to get “them to think and write about the problem.” She thought that in listening to a group and “they were confused and then after questioning them the work was clarified.” She also thought that if a group needs discipline in doing their work “I spent time with this group” to get them to share and write ideas.

- **What** was Bernice’s perception of the contribution of the specialisation programme towards her construction of her practice theory and why did she perceive it in the way she did?

Bernice expressed that “the comments the professor made were very helpful. The ideas that he gave me were very good.” Bernice was aware that her “role as a specialist facilitator of Biology” was enhanced by her participation in the specialist sessions. She enjoyed the interaction and exchange of ideas that took place during the specialization in that she stated “one of us would throw ideas and another would get ideas”.

7.5. Carol

7.5.1. Step 3: Planning Action

7.5.1.1. Learning task design (See appendix for the plan)

Carol was based at a High School from the 19 July to 3 September. During this time she facilitated Learning tasks on Mammalian Tissue and the Human Skeletal System, Human Blood Circulatory system. The planned learning task used for this research was on the Human Skeleton. This Learning task section was designed for Grade 10 learners. The learning task had all the required elements in the plan: the programme organization, the problem statement, resources, meta-learning and co-operative learning, learning task presentation, class organization, product, critical outcomes, learning outcomes, assessment strategies and criteria. Included in the design was the assessment activity - the assessment rubric for the learner exhibition assessment, report assessment rubric and cooperative group assessment.

7.5.1.2. Specialisation session

Planned by Professor Ned

7.5.1.3. Planning the Portfolio for the Portfolio Presentation Defense

Carol stated that “the purpose for presenting the portfolio is to show my professional development as a facilitator of learning during this year. When she compared herself to the teachers at the school she said that “despite my age and relative experience I am a well equipped professional facilitator.” She further stated that she was a “left brain thinker and her portfolio was presented in a way to reflect this – her creative development.” She stated that in her professional portfolio she had “included all the items and evidence of things that had made an impact on her professional development as a facilitator of learning.” She also shared that “my personal development contributed to my professional development and I included this as well in my professional portfolio.”

7.5.2. Step 4: Taking action

7.5.2.1. Learning task

a. Learning task operationalised

No notes on this...I did not observe this.

b. Learning task assessment (see appendix for assessments)

The learning task was assessed by the student teacher herself, specialisation lecturer, teacher mentor, and her peer.

(i) Self-assessment

Carol assessed her learning task as “it went well” The evidence that she used for this was that “the challenge is a problem in real life context”, and that it “adheres to most problem and learning task design criteria.” She also stated that “the presentation is clear” and the “learners were asking questions”. She also assessed it according to the assessment criteria on the lesson assessment sheet: it explicates importance; meta-learning - learners plan, monitor and assess their own individual learning; cooperative learning – groups consist of heterogeneous groups of optimal size and members are individually accountable and positively interdependent. She further ticked: learning task facilitation was concerned with providing support to learners and reverting their questions back to them; the learning task consolidation – cooperative learning groups provide feedback with all members contributing and is critically assessed on the quality of their product and presentation by peers and beginner educator. In assessing herself Carol was aware that she needed to “work with the meta-learning questions.”

(ii) Peers

Carol’s peer assessed her learning task as “original and it was very well planned.” She assessed the meta-learning as “especially good” as it “was challenging and the meta-learning questions were again very good.” She stated that she liked the fact that Carol had changed “the learning task and the real life problem ...for [the learners] to rather design and make prosthesis” instead of Carol telling them what to do and making it for them. She stated that it was “always a pleasure to sit in your class and I always learn something from you.” When completing the assessment sheet she ticked the excellent performance of outstanding quality – learning content; non-verbal communication, learner action, learning quality, discipline and consolidation. She also rated the learning task as good performance with no weaknesses.

(iii) Teacher mentor

The teacher mentor stated that he and the learners “enjoyed the learning task presentation immensely.” He said that “the learners’ knowledge was well tested and the learners used very good models to complete their investigations.” He assessed the learning task operation as excellent.

(iv) Specialisation lecturer

The specialisation lecturer stated that he “liked the learning task idea.” He stated that the “beginning and the instructions were the most important, and the pureness of it is critical.” He challenged Carol to “look at how you can improve the instructions” and “the individual work – meta-learning”. He advised her to pay “attention to the individual work where each individual must observe carefully” and to “avoid asking so many questions.” He assessed the learning task operation as good.

7.5.2.2. *Specialisation sessions*

a. Observation of Mack and Bernice’s video

When Carol was viewing Mick’s video and she observed him asking the learners questions she wanted to find out “what is the best way to ask a question?” This directed the discussion amongst the student teachers and Professor Ned to types of questions, and when, how and why questions are asked. This was done by Professor Ned providing case scenarios and the student teachers understanding was elicited and shared in the group discussion. Carol used this input to question Mack’s questioning of group management and reporting that she observed later in the video.

In observing Bernice’s video Carol observed and reported that the learner organisation during the initiating learning was “was noisy in the beginning and it got worse”. She was aware that during this phase of the learning task operation that learners should be quiet and listen to the instructions (organizational aspects) of the lesson.

b. Identity description (Who am I?)

At the beginning of the year I was a shy, introverted person. I really had my doubts if I would be able to stand in front of a classroom and act with confidence. I was uncertain if I would be able to ‘stand my ground’ as an authority figure in the classroom. Although I am still shy and introverted, I think I developed my self-image immensely this year. However through experience I gained the confidence and ability to handle myself as a professional facilitator of learning at all times.

I definitely learned to think on my feet, improvise, and switch things around. This was not a tool I had in my personal profile at the beginning of the year. I always assumed that I was not a creative person and a total left-brain thinker. I realised that I could be creative. It just took a great effort, hard work and time to come up with ideas. It really drained me and I became very negative. When I became negative a different person aroused and I did not like that person at all. I made a conscience decision to look at the

positive aspects. This made a huge impact on my personal development. I learned how to handle negativity and stress. My 'conscience' got better.

I am not a very emotional person and will not easily show my true feelings to people, but other people's emotions and feelings are of the utmost importance to me. During the year I realised that disappointments will occur during your lifespan but it is what you do with it that counts. This made my ability to work with learners better. My relationship with my learners was established quickly and it was of a good nature.

I like to do things my way but during the year we had to work in groups from time to time. This helped me to let the control go and trust that others will do a good job. This was very difficult for me, but my interpersonal skills definitely improved through this.

During the year I encountered a variety of experiences and situations....I gave my first baby steps as a facilitator of learning in my first SBEP1 and could handle myself with confidence in my second school based education programme.

There were a lot of aggravating, frustrating and low moments during the year. At the beginning I thought I made a huge mistake enrolling in the course and that it would be a waste of time. Fortunately there were also proud, satisfying and high moments. I know that I received a gift this year by looking at education in a different manner.

Although I am still Carol at the end of the year, I am an improved and better-equipped Carol. I realize that something going wrong is not necessarily a bad thing nor does it mean that you are a bad facilitator of learning; it is what you do with it that counts! I think I can give myself a tap on the shoulder. I developed and have grown immensely since the beginning of the year. From a teacher that wanted to teach to a facilitator that knows that the only way in which learners can reach their full potential is to take control of their own learning.

I can think critically about myself, my points of view, my ideas and what I viewed as important in life. I got to know myself better. All the good and the bad integrated produced a well-developed professional facilitator of learning.

*This year was one of the most challenging and difficult years of my studies, but it **was a year in which I developed personally and professionally immensely.***

c. Interpretation of Personal Profile questionnaires (See Appendix for Scan in brain profile in appendix)

(i) Carol completed a Neethling Personal Skills Instrument, Temperament Indicator and Self Image Evaluation. Carol's scores on her Brain profile were L1:81; L2:77; R1:72; R2:70. According to these scores Carol has a high preference for a L1. Carol functions as a left brained person and her scores for the R1 and R2 indicate that her right brained functioning is improved. Her scores for L2, R1 and R2 indicate that she has average strength with the skills for the quadrants L2, R1 and R2. According to the analysis scoring sheet for the Neethling Brain Instrument Carol is a person, who seeks accuracy, digs

deeper into a problem, works for precision, critical correctness – not to make mistakes, goal oriented, facts and rational information are of fundamental importance. This teacher usually prefers a formal lesson and the use of a textbook or other teaching material. Summaries will be used and encouraged. Logical argument and opportunity to analyse content are usually elements of the lesson. Instructions are given in a precise manner. This trainer tends to do research regarding the content and will encourage this in students. The content will be factually, technically and mathematically correct. This can be an authoritative trainer who likes to be in control of the situation at all times. He/she can tend to be too critical and will not allow emotions to cloud the issue.

(ii) Carol's score for the Temperament Indicator indicates that she is a Perfectionistic Melancholy (introvert) who is withholding and task-oriented.

(ii) The score for the Self-Image Evaluation (63) indicates that she has a dissatisfied self image.

7.5.2.3. Presenting the Portfolio at the Portfolio Defense

Carol stated that at the beginning of the year she “started off as a teacher and at the end of the year I was a facilitator of learning.” She said her most memorable learning moments during the year was when she had “the experience in my mentor teacher's classroom where I had the “aha” feeling and the learning task on levers where I wanted to see if it would work and it did.”

She described her practice theory at the beginning of the year as “it was just a theory but later I constructed my own meaning about these aspects.” She thought that if she “did not get the explanations and discussions about the stuff, I would not have developed my own theory.” She also thought that her own actions were crucial to her constructing her own theory when she said “I decided to stand up/wake up.” She also said that “reflections helped her construct her practice theory as she “could see what works and what does not work.” Other factors that had greatest impact was “meta-learning, everything linked to learning; my experience at the second school [which] was a diverse environment”. Carol said that all these experiences “opened my eyes.”

Carol stated that she had “experienced three years in one [the one year of PGCE, as] there was so much that I had to take heed of” and learn. She declared that if she had not done this PGCE programme “I would not have changed my understanding of what a teacher is and I would have been a teacher.” She described the feelings that she had experienced during the programme as “I had all ups and downs, it is hard work and you experience feelings of being satisfied and unsatisfied. At the end you feel satisfied.” I have come a long way, it was definitely not a waste of my time and it does not stop here. This is a huge stepping stone to the rest of my life.

Carol described the impact that this programme had on her personal development as “personally I have developed - I was very afraid, I was a terrible person and I do not want to be this type of person. Now I have become a stronger person, I have grown up in the class.”

7.5.3. Step 5: Reflecting on action and interpreting

- **What was** Carol's construction and use of her practice theory and **how** was it constructed?

Carol stated that her understanding of practice theory in the beginning "there was nothing but now I understand what it is". Carol understood practice theory to be "if you do not work with it, I do not think that you will get that learning." Carol said that she did "not think that all the concepts of facilitative learning were perfect" for her to construct her practice theory. She thought that her practice theory was constructed when she started "with a learning task design... firstly plan everything and then go and operationalise your learning task." She realised that "you learn through practice theory and if you do not get your practice theory you will have a problem facilitating learning." She related this to an experience that she had when she "presented this learning task to the learners at the other school and I decided to take it and improve on it [and present it to learners at the other school]. My meta-learning was improved tremendously (I think it was the best meta-learning of all my learning tasks)." Carol concluded that "my practice theory has had an impact on the way I design and operationalise my learning tasks." She said that she "can do things quickly and I can quickly change as well." Carol said that before she had her practice theory she "needed the exact structure before I could even start 'teaching.'" She believed that the "experience that you get in the classroom" is important for the construction of her practice theory. She said that "when you think that you can do something and you get in front of the class the children can surprise you" and then you will need to do it differently.

Carol realised and believed that it was not just from her own 'acting' but also from "comparing learning tasks and ideas with your fellow students" and "getting criticism and any assessment" which are valuable resources for the construction of her practice theory. She said that when she "read through the learners' assessment of me I gained a lot of knowledge of myself as facilitator." She thought that "every facilitator must be evaluated by his or her learners. It keeps you on your toes and informed about the standard and quality of facilitating learning".

Carol stated that now she could "change something and I am not worried that it will be a flop because of the experience that I have had." She was now "aware of what works and what does not work (not everything though)."

- **What** were Carol's feelings about the learning task operation and why did she have these feelings?

Carol felt good as her learning task "went well". She also felt more relaxed now as she had constructed her practice theory and felt more confident to operationalise the learning task.

- **What** challenges did Carol experience when designing and operationalising her learning task and **why** did she have these challenges?

Carol stated that the only problem she experienced was with “time”. She spent a lot of time on designing the learning task. She experienced a challenge with designing and operationalising the “meta-learning questions.”

- **What** highlights did Carol experience when designing and operationalising her learning task and **why** did she have these experiences?

The highlights that Carol experienced was “seeing that the learners could understand the problem”, “they really enjoyed this learning task” and they “did the preparations for their presentations in a short period of time.”

- **How** did Carol perceive the actual contribution of the teacher mentor towards her construction of her practice theory and why did she perceive this contribution in this way?

Carol stated that her teacher mentor “did not mind that I did learning tasks (although I could see that he did not like it in the beginning)”. She said that he had wanted her to “explain the work to the learners” not to get them to do it themselves. She thought that he did not contribute to her construction of “phronesis” as he “told me that I gave the learners too much to do and moved too fast with the learners” In reflecting and analysing his comment Carol thought that “I might move too fast but I saw what the learners are capable of if they really work.” She said that he also “expected me to teach the section [on the heart] first using a transparency and then give them tasks.” She decided not to do what he told her to do. Instead she “decided to do it [the lesson] in groups [learner]”. She concluded that the “learners learnt more now rather than if I had worked with the transparency.”

- **What** was Carol’s understanding of the role of a facilitator of learning and how did she construct this?

Carol said that “at this school for the first time I was the ‘thing’ I thought I was going to be at the beginning of the year: a teacher” which she did not now want to be. She thought that the teacher role was “boring and not just for me ...I can see that the learners are not listening and I am feeling frustrated.” Carol stated that she “realised again that facilitating of learning is the only way in which the aim of education can be obtained” and it is “not in the children’s nature to passively sit and listen.” She concluded that “learners just sitting and listening to a ‘teacher’ in front should not be the aim of education.”

Carol thought that she “became more professional as a facilitator” during this school-based period”. The reasons that she gave for these were “because of the setting, the high standards and pressure that the school and the parents place on the learners ... I became more confident in my abilities as a facilitator of learning”. She stated that her “organisational and planning skills were quite good” and this made her job as a “facilitator of learning easier”. She stated that she “will always remember the quote - ‘I will never

rest until my good is better and my better best.” She believed that “you can always improve on any part of your repertoire as a facilitator.”

- **What** was Carol’s experience of the contribution of the specialisation programme towards her construction of her practice theory?

Carol stated that “the specialised module contributed to my development in that my organisation is better.” She said that “every session you do different things and you learn.” She said that “critique helps from the specialisation lecturer, it helped a lot.”

7.6. Mack

7.6.1. Step 3: Planning Action

7.6.1.1. Learning task design (See Appendix for a copy of the learning task designed).

Mack was based at a High School from the 19 July to 3 September. During this time he facilitated three learning tasks: Plant Tissues; the Human Circulatory System and Nutrition. The learning task used for this research was on Blood Grouping. The learning task was designed for Grade 10 learners.

The learning task had the following aspects: problem statement, category of learning task, format of learning task, subtasks of learning task, end product outcome, authentic learning context – which included the resources, class organization; cooperative learning groups, assessment – methods, tools and techniques; learning task presentation- clarity, importance, urgency, Attached to the learning task were individual, group and peer assessment rubrics.

7.6.1.2. Specialisation session

Planned by Professor Ned.....

7.6.1.3. Planning the Portfolio for the Portfolio Presentation Defense

Mack stated that in developing the portfolio this “helped him to focus on consolidating what he had done over the year, helping him to focus where he had developed, how he developed, and looked at what the learners produced

7.6.2. Step 4: Taking action

7.6.2.1. Learning task

a. Learning task operationalised

No notes on this as I did not observe this learning task operation.

b. Learning task assessment

The learning task was assessed by the student teacher himself, specialisation lecturer, teacher mentor, and his peer.

(i) Self-assessment

Mack was aware of what he could have done differently in operationalising his learning task. He stated that he could have “grouped the learners to explain the meanings of terms ... [and] enforce discipline”, Mack declared that he had “lost focus when introducing the lungs...[he] should have introduced [the new information] at the end of the period.” He was aware that his major weaknesses were “non-verbal communication, discipline and consolidation”, his minor weaknesses were “use of media, learner action and learning quality” and his good performance was “verbal communication and the competence to use a demonstration method in class.

(ii) Peer assessment

His peer observed that “learners are presenting their findings as a group and that every learner got an opportunity to present”. The peer noted that the assessment rubric was given to the learners at the outset and they were referring to it while doing their tasks. The peer commented that “this is a good practice, as learners need to be aware of exactly what is required and how they will be assessed.” The peer also observed that the “worksheet was used effectively... the group work was managed in such a way that keeps each learner busy and actively learning ... all learners are captivated by their peer’s presentations.” She indicated that “time is wasted getting all the equipment organized and up and running. During this time learners get distracted and are not actively participating in learning.” She challenged him to think “how will you ensure that all the learner complete their answer sheets thoroughly and have all the correct answers?” She stated that she was “very impressed ... of excellent performance of outstanding quality.”

(iii) Teacher mentor

The teacher mentor assessed using the learning task assessment indicators as: *the learning task challenge was excellent, presentation is clear, explicates importance and emphasizes urgency, the meta-learning, co-operative learning, facilitation and consolidation were good.* The final overall assessment that he gave was *excellent.*

The teacher mentor praised Mack for his efforts in accessing resources when he said “he made the effort to go to the Pretoria Academic Hospital to the blood bank to obtain the chemicals needed to test blood groups.” He also praised Mack for using safety measures when he said “he followed strict safety precautions while the learners were working with the blood.” He assessed the learning task operationalisation as “a very worthwhile learning task design” and remarked that “the learners enjoyed it thoroughly.”

(iv) Specialisation lecturer

He stated that “the beginner educator is to be recommended on the quality of work that the learners produced and the skills that they learnt with him as the facilitator.” He was excited with the fact that “learners did a power point presentation, used the overhead projector, made posters, and did practical demonstrations.” He exclaimed that he was “amazed at what he (beginner educator) got out of the learners – excellent work on his part.” He assessed the learning operation as *excellent.*

7.6.2.2. Specialisation sessions

a. Observation of Mack and Bernice's video

When Mack was observing his own video and Carol had asked about questioning, Mack shared his challenge that he was faced with in that class when he said “the problem with the class in general is that you are going to get one student asking a lot of questions, especially if you have an academic in your class”. Mack had responded to the questions asked by the one learner and all the other learners were excluded. Professor Ned asked them to think about how he could have used this situation to ask questions of the whole class. Mack became aware that he needed to work on the organisational features of using group inputs to maximize the learners' learning. This awareness is evident from the declaration that he made “ it would have been better if I could have used them.” Mack was the first student to observe and report on the learners' chaotic behaviour while he was operationalising the lesson. He became aware as a result of the discussion in the group how he was actually the cause of the learner's distraction with the result of chaotic learner behaviour. Mack felt good about his video being used and discussed and from this experience he realised that everything should be “meaningful in the class and my learning task operation was not as meaningful as it could be.”

When Mack observed Bernice's video he indicated his support for Bernice's response about Brown being dominant. But while responding his uncertainty about this Genetics content was elicited when he said “Brown is always dominant, I don't know”. Mack later used his constructed “phronesis” when he suggested a possible problem that he had formulated, for Bernice to use in her learning task.

b. Identity description (Who am I?)

The reasons for acting the way I do are based on my beliefs (Christian) which will remain unchanged. The way in which I act could however change because these are based on my current attitudes and point of view.

‘I am a holist by nature, it is therefore important for me to be able to see the bigger picture rather than the isolated facts’. *It is great that I am a person who likes to see the bigger picture but I have come to realise that this can be problematic and also an excuse for me to pay little attention to the details of Biology. It is important for the learners to understand and appreciate the broader systems within the subject of Biology, however it is also important for them to know and understand a certain amount of detail about these systems. It is therefore very important for me to gain a stronger content knowledge about Biology.*

I am also what I will call an intro-extrovert. That is that I am not quite an introvert but not quite an extrovert. *I was rather scared that I would have trouble in controlling the class; however I feel that the discipline in my class is quite good. I have a rather chilled out atmosphere in my class and therefore it is not a very formal or strict one. I sometimes felt that it may have been a little too chilled. I should therefore not hesitate to get involved with the learning process or create a more formal learning*

atmosphere. The last thing I want is for the learners to feel that I do not care because I am too drawn back or chilled out.

I have a fairly good self image; however it can definitely be improved in more ways than one. I saw that my self-confidence definitely improved as time went by and I became more comfortable in the interactions with the learners, which is a very comforting thought.

The following section focuses on my understanding of what I have learnt and what I need to change with regard to facilitating learning. I have now come to realise that there is a very big challenge for me to be firmly grounded in my knowledge of the subject before I can facilitate my learners to make the content their own. I also feel that the content is as interesting as the facilitator wants it to be because he or she can either just do what they did in the previous year or if they want to be a very successful facilitator they can constantly renew their content knowledge with the latest findings and scenarios in the life sciences and this will make their LTD (Learning task design) much more authentic and real life. It has become very apparent to me how important the LTP (Learning task presentation) is and how important it is to follow the guidelines for successful LTP. It is very important to give clarity, show importance and create urgency which all lead to the final action. Without establishing this in the LTP the maintaining of learning will be much harder (and more chaotic) and will take much more time.

Another thing that I discovered about myself is that my method of questioning during maintaining learning needs improvement. I tend to just want to answer the learners questions instead of going through the various steps that are available to me, such as referring a question back to the learners or referring the learners to resources. I must realise that I am taking their independence away from them.

I have developed in all seven roles of an educator as described in the norms and standards (2000). These seven roles have been extensively incorporated into my role as a facilitator of learning. I do not however feel that it is these roles and competencies that define me as a facilitator but rather my classroom presence which is achieved through my interpersonal relationships with the learners. I can truly say that above all, I merely enjoy being in the classroom.

I would also like to point out that I did not say that I was fully developed in my roles and competencies but rather that I had developed.....As yet I have not reached that point on the horizon for which I am aiming. However when I do reach it, I am certain I will realise that the beauty of the situation is that, there will be a new horizon with far greater challenges. Humans truly have unlimited potential.

c. Interpretation of Personal Profile questionnaires (Refer to Brain Profile in appendix)

(i) Mack's scores on his Neethling Personal Skills Instrument were L1:81, L2:72, R1:79, R2:68. According to these scores, Mack has a high preference for a L1 and an average skill strengths for L2, R1 and R2. Mack is functioning more as a left-brained person. According to the scoring sheet Mack is a person who is good at digging deeper researching and solving problems. His teaching preferences are those of a L1 trainer/teacher. This teacher usually prefers a formal lesson and the use of a textbook or

other teaching material. Summaries will be used and encouraged. Logical argument and opportunity to analyse content are usually elements of the lesson. Instructions are given in a precise manner. This trainer tends to do research regarding the content and will encourage this in students. The content will be factually, technically and mathematically correct. This can be an authoritative trainer who likes to be in control of the situation at all times. He/she can tend to be too critical and will not allow emotions to cloud the issue.

(ii) Mack's score for the Temperament Inventory indicates that he is a Popular Sanguine (extrovert) who is outgoing and people-oriented.

(iii) Mack's score for the Self Image Evaluation (61) indicates that he has a dissatisfied self image.

7.6.2.3. Presenting the Portfolio at the Portfolio Defense

Mack stated that "the purpose for presenting the portfolio is to show that I have developed in all seven roles of an educator as described in the norms and standards of Educators (2000)". Mack declared that his "learning task presentation was a big thing" for him as he had not presented it well over a very long period of time. He was troubled with "what I needed to do to lead to clarifying aspects for learners and what learners really need to know, why they need to do the work and the urgency to do it." Even though he had experienced these troubles he was aware that he had "experienced a lot of development" and also what he needed to change when operationalising a learning task. He described his eureka Learning task [on Anaemia] which set him on the path to becoming "better and more interesting to learners [as] ... everyone knew exactly what they were to do. I set the tone for the urgency and stated that they had one period and they needed to hurry up."

Mack stated that initially in the programme the facilitating learning workbook made no sense to him even though he had knowledge of constructivism. He said that the only time that he came to grips with facilitating learning was "by getting into practice." The 'thing' that helped his practice was "the reflections that I did". In evaluating his reflective practice he stated that "I do think that I did not reflect enough and now I see the importance of reflection, especially critically [reflecting]."

Mack stated that there were "so many things that gave me pride and joy... [one such thing was] my compact disc Learning task Design template" that he had developed and presented during his portfolio defense.

Mack stated that in the PGCE programme "I have learnt to be a facilitator of learning rather than just a teacher teaching." What he meant by this was that he was not going to "just hand out notes, regurgitate notes" as he was going to create "circumstances where learners are engaged in developing meaning of actual content, developing personally in content, how to make it real to them and for them to use it". What Mack was working towards was "you really want the learners to maximize potential, but I think this is not the be all and the end all." He thought this way because he believed that as a facilitator of learning you are faced with and experience so many emotions and these are "a central aspect to facilitate

learning.” He described his own emotions of despondency and despair when he tried to facilitate learning “and encourage learners to complete the activity and achieve what you want them to achieve and the learners are not convinced.” Mack believed that a law for facilitators of learning is that they had to “have love ... [and] the way in which you encourage and support” a learner is important.

Mack declared that (a) he had “reached the end of the year and I have so much that I can develop on; I am a lifelong learner,” and (b) that his personal progress “got me out of my comfort zone and I am not dependent.”

7.6.3. Step 5: Reflecting on action and interpreting

- What was Mack’s construction and use of his practice theory and **how** was it constructed? (See Appendix for concept map)

Mack stated that he did not know “what was expected of us [me] in the curriculum... we [I] discovered this at schools.” Mack stated that he had “learnt a lot about, day-to-day ‘teaching’ and working with people in a school. What might seem like menial things, like having notes prepared on time so they can be photocopied for your class, having tests done in advance” at the school. Mack had learnt a lot “about how to and what the importance of one [learning] task is, and how to make that a real life sort of learning task that is going to be relevant to the learners and to be able to give them positive influence in their own lives.” The evidence of further learning was also in a statement that he made after operationalising a learning task, “my main development during this learning task was a total mind set change of the outcomes that I can expect from the learners.” Other evidence that he gave of his learning was that “professor said that I explain things too much [during the operationalisation of the lesson]. I know that I should not so I tried to make the explanation as brief as possible”. He also said that professor told me “I must not set or give a lot of the answer or problem away ... he said I put too much in the problem that I set to them.” Mack said that he then “set the problem according to that and I tried to make them [the learners] think as much as they can about the whole [problem].” Mack was aware that he needed to make his lessons problem-based and he said that “maybe I do not know how to yet.” His lack of knowledge about how to work with problem-based lessons could be due to his own beliefs about working with them as evidenced by his comment “I feel that problem based lessons take a lot longer than just normal teaching. So I feel I would have got a lot more content ... in this lesson if I had just been teaching.” He was not comfortable and stable with his belief and what was expected of him when facilitating learning. This discomfort and instability with his belief and the expectations of what is required from a student teacher in the programme was evidenced by him saying:

I mean, the process part [the development and use of process skills] is there, but I also feel that the content part is important. And maybe there is a place for pure learning or ROTE learning, whatever you want to call it. I know ROTE learning has very negative implications,

but some of me wants to say that there is a place for some part of it in science, in Biology. Yah, but I am still working to it (Mack, semi-structured interview, September, 2004). .

During the construction of his practice theory he experienced different emotions. He felt “greatly encouraged” when he became aware of what he could expect from learners. Mack also felt confused and frustrated with himself and the changes that he was expected to make. He said “I originally intended to do [teach]. I thought, maybe it is just; I do not know how to go about the whole problem based facilitation. I don’t know how I could have got them thinking about it more.”

He was aware that in facilitating learning he had “not been managing my time properly. I need to be learning more to do, how to manage my time.” He related an experience that he had where “I got behind on my marking and then I had this huge pile of marking and so it was ten times worse getting through that.” He was aware of the action that he needed to take to organise his time “so, if I just keep day to day up to date with that stuff, it makes it easier.”

Mack stated that his “practice theory informed my relationship with the learners ... and my character and my beliefs influence[d] my relationship with the learners.” He thought that “when you sort of operationalising a task or anything in the class, you need to, to a certain extent, have a formal relationship with your learners.” He described this formal relationship as “they [the learners] need to respect you and when you need to say something they need to listen to you.” Mack believed that “respect is earned. You obviously must respect them (the learners) in turn and not treat them like rubbish.” He was aware that his class of learners “does not have that, but to a certain extent they do.” From this he realised that full respect from learners “is what is needed in the [his] class” and he was aware that he needed to insist that when “something is being presented to them, they need to listen and this does influence the way I treat them.” He said that initially when you arrive in a classroom “you just want to be just sort of a nice teacher, so you are going to be nice all the time and not have to enforce anything.” From his experience of standing up in front of the classroom, he realised “somehow that you need to enforce the structure into the class. Otherwise, you will not just get anywhere with your groups [learners].”

Mack was aware that the context of the school played a role in his construction of his practice theory. He said that “I also learnt a lot of obtaining information and where to find resources to use, and what resources I can use. As I said, this school has got good resources.... and therefore I can use it (resources) a lot.”

Mack’s understanding of assessment was that “as a facilitator one of my important roles is to assess. I say important because I feel that this can quite frankly make or break a learner.” He understood that “good assessment rubrics – peer, group and individual can be used to assess learners.” He stated that when he designed a learning task he placed the assessment rubrics “in the section Learning Task

Presentation format because it is necessary that the learners are presented with the criteria with which they will be assessed before they execute the learning task.”

Mack stated that “I feel that I’m definitely working in the paradigm that he wants us to work in, that I’m definitely following the whole gist of the course, what it is about and how important it is getting learners to really interact with the content.” But Mack was still “sure how it fits in.” He was referring to how the learners could use science process skills to construct meaning when he said “I mean, the process part is there, but I also feel that the content part is important.” Mack felt that he should be working more with the content so that he could reach “each of the learners “in his class. He did not feel comfortable that all the learners would be thinking different things about the content. He thought that it would be better if he also taught content to the learners when he said “and maybe there is a place for pure learning or ROTE learning,”

Mack concluded by saying that the “ideas that I used as being in tune with the thinking within the paradigm.” This thinking he said “has come about from I think the reality of working in an education system (the school)”.

- **What** were Mack’s feelings when designing and operationalising the learning task and why did he have these feelings?

Mack expressed his feelings when he said “I have been enjoying the facilitation a lot”. This he said was due to the fact that “I have been learning a lot and I have seen myself grow a lot.” He did express though that his feelings went “ups and downs”. He said that before the lesson he “felt a bit distraught about what I was going to do.” The reason that he gave for this was “I guess you could say it was just a lecturing sort of approach to today.” He said that even though he tried “changing the lesson to see how it goes, the lesson went slowly and I do not think it was very good quality of learning taking place.” The reason that he gave for this was that “the learners did not get much done in the time that was given to them.”

- **What** challenges did Mack experience and **why** did he have these challenges?

Mack stated that he had experienced “some very late nights. I think the late nights are a down.” He said that he had experienced challenges with making the learning task challenging for the learners. He was disappointed that most of the learners thought that “they were doing a stupid little exercise here” when he “did not feel [think] that it was stupid because I saw where I wanted them to go, but I did not quite get there” Mack stated that he had challenges particularly with designing and operationalising “a lesson like this (practical investigation of the external structure of a leaf).”

- **How** did Mack perceive the actual contribution of the teacher mentor towards his construction of his practice theory and why did he perceive this contribution in this way?

Mack said that his teacher mentor “was ⁶lekker” because she was “encouraging and she opened her classroom up ...she really allowed me to do what I liked... and she gave me ideas of where to get resources for the sections that I was facilitating.” He thought that the teacher mentor could have given him a more structured list of what “needs to be covered” in Biology for the term. He did think though that “this was a good thing that I had to work it out myself. I could see how long it takes to work out each section.” He did say that he had “used a lot of what she showed me” and “she left it open for me to use or not use what she showed me – if I wanted to use it, I did, if not that was okay.”

- **What** was Mack’s understanding of the role of a facilitator of learning and how did he construct this?

Mack felt strongly that the role of a facilitator of learning is also to work with content and not just skills when he said “when the learners were observing the external structure of a leaf, maybe they are observing, maybe they are getting all these skills but where is the content?” He was aware that when the learners were recording their observations that this “is content” but that “there is also a lot of content that I wanted them to get done in that one lesson”. He thought that as a facilitator of learning he should stand up “and lectured it, they would not have got the skills they did in this period and they would not have probed into the whole thing as much, but they would have got the content.” He thought that as a facilitator of learning he had to have a way where he did not “split the two (content and skills) but there should be a way in which, there is a way I am sure, in which more content can be done.” He was also aware that his role as an assessor was important as this could “make or break a learner.”

- **What** was Mack’s perception of the contribution of the specialisation programme and why did he perceive it in this way?

Mack stated “Not much, not really at the moment.” He related an experience that he had had with Professor Ned when he said “Professor said last week that I should come and see him before I do my lesson this week, which I then did.” He described the interaction between him and professor as “he [Professor Ned] was quite blunt with me and quite harsh ... [and] I was actually quite worked up about the whole situation.” Mack stated that “Professor has got very rigid views on the whole thing, if you not doing it like that then it is wrong.” Mack stated that during the talk Professor “did clarify a number of things for me, which I think was needed.” But Mack stated that “one big thing, that is, that I feel very strong about is ... that he has not given me much encouragement about what I am doing. One of his points of facilitating learning is to encourage your students.” Mack felt strongly that “You are not going to get any learning done if the student is not going to like what they are doing.”

Mack stated that he felt:

⁶ Lekker is an Afrikaans word that means nice in English

like I have not got positive, positive critiques about what I have done. I understand that it is crucial to get constructive criticism - find out what you did badly in the lesson and I think it is also just as crucial, the opposite of doing that, to find out what you were doing right (Mack, semi-structured interview, September, 2004).

Mack felt strongly that “the approach that he [Professor Ned] has to the paradigm that he wants us to work in is not very focused on the content.” Mack thought that the approach was more focused on “getting them [learners] to apply the content to their lives through a real life problem.... and therefore you will not get through as much content knowledge.” Because Mack thought that “content still plays a part in education. ... I am not sure where that is and I sort of wanted help there [with working with content and process skills]” Mack was disappointed that Professor Ned told him that “I am working in the totally wrong paradigm and that I must change my thinking to a new paradigm.” Mack was really grappling not so much with the amount of content in a lesson but with the move from a transmission style of teaching to a transformative style of facilitating learning.

7.7. Step 6: Evaluating Action

This step focused on evaluating the action (intervention) of this cycle. Since this is the last cycle the section what feeds into the next cycle is not included.

The student teachers’ construction and use of their practice theory during this cycle is evaluated on

- a. their response to the challenge to their practice theory during the observation week at the school and
- b. their response to the challenge to their practice theory during the school-based learning period.

In evaluating the action I read each student teacher’s case with regard to the observation of the teacher mentor at the second school, understanding of the level (standard) of work for learners and the context of the school, and understanding of his/her progress I then compared these responses to those that the student teachers presented in step 4 and 5. I then analysed and assessed the intervention on the basis of each student teacher’s reflections about their construction and use of his/her practice theory of facilitating learning and for facilitating learning. The analyses and evaluation of the intervention is presented below.

7.7.1. General comments - analysis and evaluation of the intervention

7.7.1.1. The student teachers’ response to the challenge to their practice theory during the observation week at the school

The experiential reflections that the student teachers shared at the beginning of this cycle revealed their perception of teaching and learning and that of the role of a facilitator of learning. Bernice, Carol and

Mack's perception of teaching and learning was that learners should be challenged and it was the role of the teacher (facilitator of learning) to challenge the learners. Bernice, Carol and Mack thought that learners do very little because the teachers "only gave them a little work" (Carol) and "expect too little from the learners" (Mack) as they perceive the learners as "not capable" (Bernice). Their perception was that facilitators of learning should demand and expect more from learners. Mack had first-hand experience of this at his second school. He realised that there was a different work ethic at this school where "a lot is expected of the kids and therefore they perform." Carol and Bernice on the other hand were aware that teaching and learning across different school contexts were such that learners were "fed everything"(Bernice). Overall, the student teachers believed that learners could and should do more during the learning process given the support and opportunity to do so by the 'teachers'.

From their immersed concrete experiences the student teachers could project the role that they would play in the classroom. Bernice described how she would need to boost the "learners' confidence" to get them to work while Mack thought that what a 'teacher' expected of learners "could never be too high but you had to be careful not to go over the heads of learners". Carol, as a result of working with the learners and the learning tasks, was aware that she expected too much from the learners. She said that her understanding about what to expect from learners "would have to come from experience and a talk to my mentor". The student teachers were developing as critical thinkers by being engaged in an active process of reflective analysis and projected action (Howell, 1994).

The student teachers' reflective action of assessing their progress was critical to their further construction of "phronesis" as they needed to make connections between what they observed and realised at the school and their existing "phronesis" as espoused by Lombardi's (2007) in his first principle of authentic learning. The student teachers were expected to work at a metacognitive level when reflecting on their progress at the beginning of the second school-based learning period. They did this when they specifically identified and described where, what and how they had improved and what they needed to improve on. Mack realised that "there is still a lot that I can improve on", while Bernice thought that her progress in assessment was "much better because my first assessment stuff was kind of don't know how to, where to". Carol was aware that her organisation skills were better than before and she also knew how to improve them. Carol during the first school-based learning period had seen the consequences of her organisational skills, which is recognized by Senge (2006) as a crucial feature of learning which is rarely done. Her perception therefore about what she could do to "see how the facilitation of learning could happen better" informed her practice of what she was going to do which is supported in the literature by McNiff & Whitehead (2005). Mack as a result of reflecting on his learning experience was aware that he "felt a lot of stress due to his slow pace" and these feelings served to support his knowledge construction as suggested in the literature by Lombardi (2007). Mack as a result knew that he had more to learn. The student 'teachers' beliefs about what was, is and could be possible in terms of facilitating learning were colliding to form swirling waves moving higher and higher at a fast

pace resulting in the construction of “phronesis” by the student teachers. These swirling waves symbolised both the mixture of beliefs and feelings that each student teacher experienced individually and the concomitant social group sharing of his/her beliefs and feelings about facilitating learning during this cycle.

7.7.1.2. The student teachers’ response to the challenge to their practice theory during the school-based learning period.

a. Designing learning tasks

The requirement for student teachers to be engaged with authentic learning tasks and be immersed in authentic learning contexts for them to construct “phronesis” cannot be undermined and undervalued. Bernice Carol and Mack designed learning tasks according to the learning task requirements as suggested by (Slabbert, 2004). It was the challenge and demands of designing the learning tasks and not just the experience of doing this that impacted on the student teachers’ “phronesis” of what this activity with the ultimate achievement of a polished end-product (Lombardi, 2007) entailed. Planning these learning tasks demanded effort as described by Bernice – to “read up on the topic and prepare carefully” and then the “thinking and initiating ideas”. Bernice and Mack experienced challenges with generating ideas for the learning task (activities) while Carol’s challenge was with designing “meta-learning questions.” Mack particularly experienced challenges with designing practical investigation activities due to his intense belief that content (lots of it) must be worked with in a lesson. Bernice described her designing as “you start thinking when I plan it this way will this get learners to work with it, will it interest so and so, the clever ones as well.” Bernice, Carol and Mack experienced challenges with insufficient time to design the learning tasks especially when you have last minute great ideas as in Bernice’s case. These are the challenges that the student teachers shared, which are not necessarily the full complement of challenges that they experienced when designing the learning tasks. Carol had realised and believed that the positive impacts on how she designed her learning tasks came from her own ‘acting’, “comparing learning tasks and ideas with your fellow students” and also from using her “practice theory”.

The understanding of the type of learning task that is required which is “a real life sort of learning task that is going to be relevant to the learners and to be able to give them positive influence in their own lives” (Mack), the challenges, the role, social interaction, effort, and attitude each student teacher experienced and responded to were essential for him/her to design the learning tasks in the way in which they did. .

b. Operationalising Learning tasks

Bernice’s use of meta-cognitive questions in operationalising her learning task resulted in positive outcomes - the learners enjoyed it and were actively participating, she gained confidence, constructed knowledge and developed skills to manage co-operative learning. Carol’s positive outcomes when she

presented a learning task that she re-designed – the meta-learning was the best, learners enjoyed it and she was relaxed and confident. Mack's positive outcome was a "total mind set change of the outcomes that I can expect from the learners", his enjoyment of interacting with the learners and his awareness of his development. Mack though was uncomfortable and dissatisfied with his use of problem-based learning in that he wanted to use rote learning where the learners and him could work with more content.

The feelings, beliefs and actions that the student teachers had stemmed from their action of 'doing' (presenting) learning tasks. This action of doing served to promote the further construction of their practice theory.

c. Learning task assessment

The assessment of the leaning tasks by the student teacher himself/herself, their peers, teacher mentor, specialist lecturer and researcher where possible served to validate assessment comments and provide constructive criticism and suggestions for the student teachers to use. This is evident in the following where in assessing herself himself Carol stated that she needed to "work with the meta-learning questions" and Mack was aware that his major weaknesses were "non-verbal communication, discipline and consolidation". The self-assessment was crucial for the student teachers to make connections: between their beliefs, experience (action) and outcomes of operationalising the learning task, and also with the expected outcomes as outlined in the assessment guidelines for learning tasks. In this process of self-assessment the student teachers are forced to identify and confront their strengths and weaknesses and in so doing decide on a plan of action for development. The student teachers also saw the value of this assessment for their professional development. Carol realised and believed that it was not just from her own 'acting' but also from getting "criticism and any assessment" especially from "the learners' assessment of me I gained a lot of knowledge of myself as facilitator." She thought that "every facilitator must be evaluated by his of her learners. It keeps you on your toes and informed about the standard and quality of facilitating learning". So learner assessment was viewed as valuable and should be included in the assessment of the student teachers' facilitation of learning.

d. Reflections

The requirement for student teachers to reflect on their learning was a crucial eye-opening experience for them. Their reflections now focused on descriptions of what they had experienced and more significantly on the intense emotions that they had experienced. These reflections also focused on a constructive component where each student teacher had a vision for what they could change and how this would impact on the learners' learning experience. Bernice's reflection on the 30 August was, "As I engaged with this learning task I was able to distinguish quite effectively between meta-cognition and thereafter co-operative learning. ... Successful management of meta-cognition followed by co-operative learning ensures the acquisition of appropriate life skills".

e. Teacher mentor

Bernice expressed that she had not learnt so much from her mentor. Her teacher mentor provided support in the form of direct positive feedback and indirect positive learning evident from Bernice stating “I learnt how not to behave with the learners”. Carol also thought that her teacher mentor did not contribute as he expected her to ‘teach’. She also had indirect positive learning in that she challenged his suggestion to teach by facilitating and using group work with in her words the “learners learnt more”. Mack had a different experience with his teacher mentor. She was supportive and encouraging and “she really allowed me to do what I liked”. This supportive, freedom to operate environment was evident in Mack saying that he had “used a lot of what she showed me” and “she left it open for me to use or not use”. As Mack likes structure he expected a structured planner from the teacher. This absence of a structured planner was a positive learning experience for him in that he “had to work it out myself. I could see how long it takes to work out each section.”

It is important that the personal and professional expectations of teacher mentors must be considered when deciding on who the teacher mentors will be in the programme. Comments like “some teachers are making it very difficult for me to present a learning task” should be addressed with the appropriate individuals.

f. Specialisation session

During these sessions the social interactions and learning from reflections shared was critical for the student teachers construction of “phronesis”.

During the video-viewing session Bernice came to realise her weaknesses with facilitating learning on her own and in communication with the group. As Carol was experiencing problems with meta-learning questions she used this opportunity to ask “what is the best way to ask questions”. Mack became aware of his weaknesses with facilitating learning and what he could do to overcome them. This freedom to critically analyse and share ideas that could enhance the facilitation of learning, during the viewing of the student teachers’ videos is a necessary requirement for these sessions.

The specialisation sessions were as Bernice described them where “one of us would throw ideas and another would get ideas”. This idea sharing was a necessary springboard for the students to further construct their “phronesis” of facilitating learning and engendering feelings of support and enjoyment. The nature and design of these specialisation sessions was commented on by Carol when she said “every session you do different things and you learn.” What is significant is that these different things were linked to the different features of facilitating learning that the student teachers had experienced. “You learn” are powerful words used for these sessions especially since the discussions were not pre-arranged, not from theory but they stemmed from the student teachers’ reflections of their concrete experiences in the authentic learning contexts (school). Both Bernice and Carol stated that Professor was very helpful in terms of ideas (Bernice) and critique (Carol). Since Mack was experiencing differences with Professor Ned and he felt uncomfortable with this experience he stated that these specialisation sessions did not

contribute to his development. This was not the case as he later said that Professor Ned “did clarify a number of things for me, which I think was needed.” The support that student teachers expect is not necessarily the support that will be provided. As this programme is focused on maximizing and fully utilizing human potential the student teachers are challenged even “forced” to make the jump as it was in Mack’s case from a transmission to a transformative style of facilitating learning.

The setting and the context of the specialisation sessions was crucial to challenging the student teachers’ practice theory and to further construct it to one that was aligned with transformative approaches to facilitating learning. The social interactions and individual introspection with dynamic learning were critical to the student teachers transformation in their personal and professional identity. Critically important during these sessions is the character and professionalism of the teacher educator. He definitely played a major role in the student teachers’ transformation. He is acutely aware of what it means to facilitate learning for the student teachers to maximise and fully utilise their human potential.

g. Portfolio Defense

This session was a time for the student teachers to reflect on their years experience and to celebrate their development. Their professional development is described in the following sentences. Bernice said “the most amazing thing for me that I learnt is that I can facilitate learners”. Carol stated “started off as a teacher and at the end of the year I was a facilitator of learning.” Mack stated “I have learnt to be a facilitator of learning rather than just a teacher teaching.” For the student teacher to be able to say that they are facilitators of learning started with the beliefs and actions that they had and seeing the consequences of these beliefs in action. Also, assuming the identity of a facilitator of learning was critical for the student teachers to understand and assume the role of a facilitator of learning. Carol referred to herself as a facilitator of learning, while Bernice and Mack referred to being able to facilitate learners. This identity declaration instilled the being of that identity in the person.

The programme also challenged the student teachers to develop personally. Bernice who did not “trust people easily ... [and who] would rather be alone than amongst other people” learnt to “work with different people with different personalities.” Carol stated that she had developed her “self-image immensely” and she “gained the confidence”

And she concluded that “now I have become a stronger person, I have grown up in the class.” She had identified her weakness as a scared person that she did not now “want to be”. Mack saw himself as out of his “comfort zone and I am not dependent.