'We have to flap our wings or fall to the ground': The experiences of medical students on a longitudinal integrated clinical model

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Background. In 2011, Stellenbosch University introduced a district hospital-based longitudinal integrated model for final-year students as part of its rural clinical school. The present study is an analysis of students' experiences during the first 3 years of the programme.
Methods. All 13 students who started the programme between 2011 and 2013 were interviewed. Thematic networks linking recurrent issues were developed and transcripts were analysed against this framework using ATLAS.ti.
Results. Two major themes emerged. These were 'preparation for being a doctor' and 'academic/exam preparation'. Students were overwhelmingly positive about the working atmosphere and their preparation for clinical practice and felt that their learning had been facilitated by the flexibility of the programme and the requirement to take responsibility. This contrasted with their academic ('book') learning, which was characterised by uncertainty about expectations, particularly regarding exams and parity with learning at the central teaching hospital. The flexibility of the integrated approach was seen as a problematic lack of structure when it came to academic learning. Negative academic emotions were compounded by some frustration about administrative issues early in the programme.
Conclusions. The district hospital-based longitudinal integrated model has great potential as a teaching platform for final-year students; however, students remain concerned about academic learning. Potential strategies to reduce student anxiety include more opportunities for dialogue between rural students and specialist teaching platforms, clearly communicated expectations – both about what the students can expect from the programme and about what is expected from them – and administrative excellence.

Afr J Health Professions Educ 2015;7(1 Suppl 1):119-124. DOI:10.7196/AJHPE.507

The Faculty of Medicine and Health Sciences at Stellenbosch University established a rural clinical school (RCS) in 2011 to address shortages of rural health workers and improve medical training (see article by Daniels-Felix *et al.*[1] (elsewhere in this edition). The Stellenbosch RCS encompasses two distinct models of training: a traditional, disciplines-based model sited at the rural regional hospital and a longitudinal integrated clerkship or model (LIM), where students meet the majority of the year's core clinical competencies across multiple disciplines simultaneously.[2]

Supervision and mentorship on the LIM comes principally from the family physician, although specialist tutorials are provided weekly at the regional site and by visiting specialists. Students also spend 4 - 6 weeks at the rural regional hospital for additional exposure to orthopaedic surgery and other specialities according to student preference.

While placements in the rural traditional model quickly reached capacity, there has been less demand from students for the LIM, which represents a much more radical change from the conventional teaching platform. This difference was articulated by a LIM student in the present set of interviews, who noted that the students in the rural traditional model were still 'half in the nest, whereas we have to flap our wings or fall to the ground'.

In our work to date, we have not specifically described the students' experiences of the different models separately.[3] The purpose of the present study is to examine the experiences of the first 13 students to choose the LIM between 2011 and 2013; we believe that a critical examination of their experiences and reflections will help us to understand how the district hospital can become a more popular and acceptable training option for students.

Methods

An educational research framework was previously developed;[4] this informed a process of longitudinal evaluation that included interviews with students before, during and after their placements. Students were interviewed by one of two interviewers according to a topic guide that explored the students' experiences, both positive and negative, whether they felt prepared for internship, reasons for selecting the rural model, career plans, their advice to prospective RCS students, and whether they would make the same choice of placement again. Interviews lasted about an hour and were conducted either in English or Afrikaans, according to the student's preference.

Transcripts from interviews with all 13 students who had started their final year in the LIM between 2011 and 2013 were selected for analysis. All interviews took place in the ninth month of their placement and the comments of one student who transferred from the LIM to the traditional model at the rural regional hospital after 6 months were included with the analysis of the 12 students who completed the LIM; the experiences of this student were similar to those of the other 12. Transcripts were read several times and a thematic network was constructed based on the method described by Attride-Stirling.[5] Recurrent issues were identified and listed as codes, codes were then grouped as basic themes and a hierarchy of themes that contributed to a global theme was constructed. This process was carried out independently by MV and FC, results were compared, discrepancies were resolved by discussion, and consensus thematic frameworks relating to global themes were constructed.

Transcripts were then entered onto ATLAS.ti and coded. Text segments relevant to each theme were extracted, read as a whole and interpreted as an argument by MV and FC and consensus was reached. The arguments were inspected for face validity by the two senior authors (HC and SvS), who also revisited the transcripts.

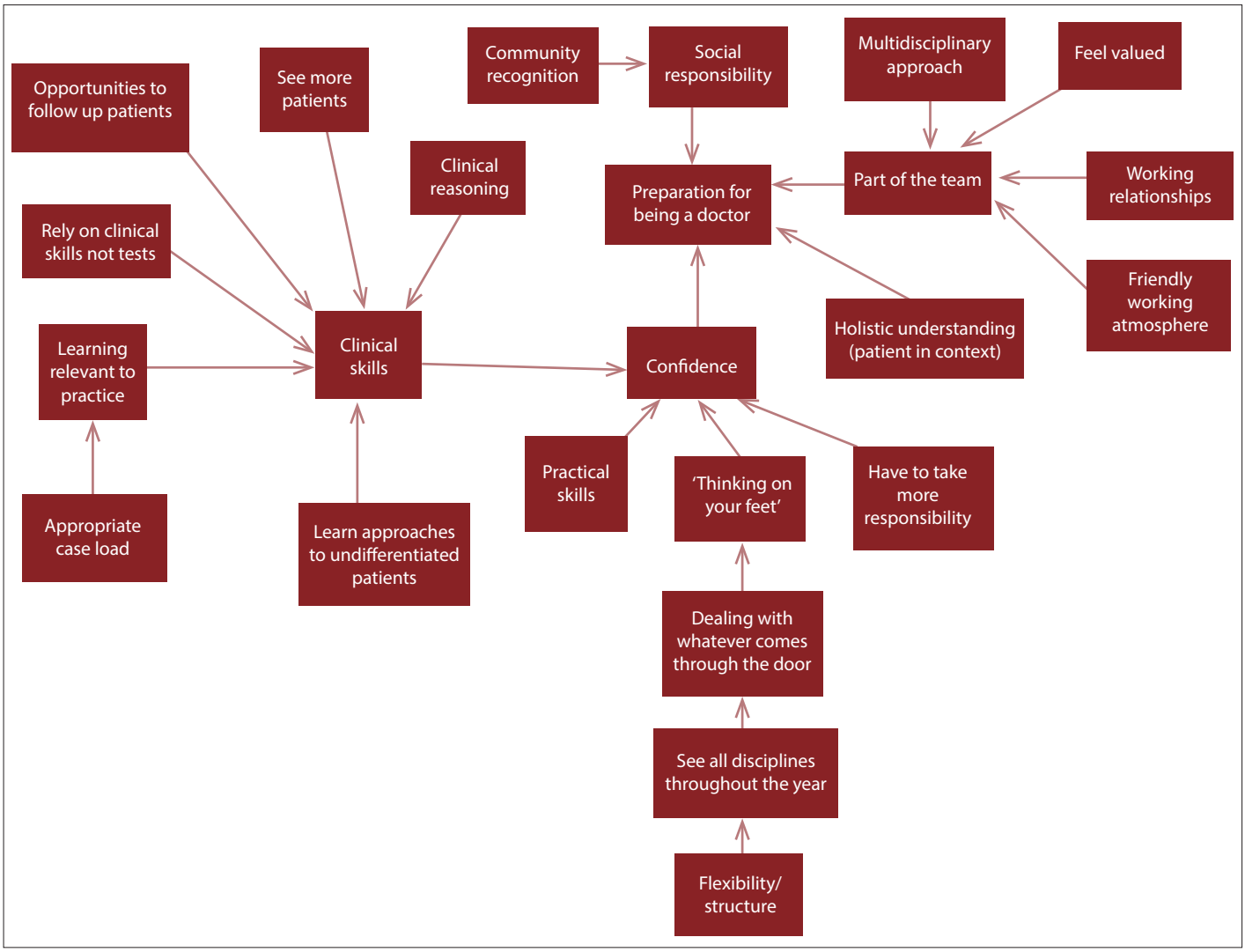

Fig. 1. Thematic network for 'preparation for being a doctor'.

For the presentation of results, comments translated from Afrikaans are indicated by square brackets and named references to the Central Teaching Hospital (CTH), the Rural Regional Hospital (RRH) and the District Hospital (DH) are replaced by the appropriate abbreviations.

This study was part of a larger evaluation of the RCS that was approved by the Human Research Ethics Committee at Stellenbosch University.

Results

Two major global themes emerged from the transcripts: preparation for being a doctor and academic learning/exam preparation. The thematic networks linking the relevant codes and themes are shown in Figs 1 and 2.

Preparation for being a doctor

Most of the students were confident that the LIM had prepared them for internship:

['I can't wait, I think it's going to be wonderful. I don't feel frightened, I know I can be safe, I know I shall know when to ask. I'm looking forward to it ... I feel this year prepared me very well for internship, very well.'] P13

Several students, however, expressed the reservation that their clinical confidence did not extend to exams:

['I feel ready for next year, I don't know how well I am prepared for the exams. But yes, in general, no major problems or issues'] P13

One student was worried about the prospect of internship:

['I'm terribly frightened about it. I don't think I am prepared at all.'] P11

There was a clear sense that they felt better prepared for internship than their colleagues on more traditional clerkships because they saw greater numbers of patients, learned clinical approaches, saw a caseload relevant to practice, had to work their patients up 'from scratch' and had to take more responsibility:

['So I think the fact that I can handle the common things here ... that was very good for me. You get the idea about what the relevant things are and what you must pay attention to. Having said that, it also made me realise that you don't have to know everything, you can easily pick up a telephone and call, and stuff. That was a relatively important thing that I realised, not necessarily the academic learning.'] P4

'Being more hands-on with patients, having to set up your own management plan, having to write prescriptions and then ask the doctor and go back and correct your mistakes, that facilitates your learning. It's not like in (CTH) where you just get spoon fed everything. I think that's it.' P8

Students also felt that their exposure to practical procedures gave them an advantage over their urban CTH counterparts:

['Practically I think we are far ahead of any (CTH) student. I think I'm also far ahead of most interns as well. I have absolutely no problem with seeing patients on my own.'] P1

['I think there were so many practical things that we did. All the examinations, any practical thing that we should have done, we could do it ourselves … but further, they gave us all the opportunities on earth to do everything ourselves.'] P9

They overwhelmingly reported doing their clinical learning in a supportive, friendly atmosphere where they were considered part of a team:

'You are definitely part of a team. At (CTH) I was one of those students that you're like in the background, you're not really ever forced to participate or do stuff, and here it's very different. You have to make decisions on your own, and practical stuff, like getting to write prescriptions, knowing the dosages of stuff, that you don't ever do at (CTH).' P8

Many noted the positive relationships with staff members and were particularly appreciative of the attitudes of nursing staff, which they found in contrast with their experiences in the urban CTH:

'It's great working in a team, I think. That's the one thing that I really appreciated this year. People really value your opinion, like in a rural hospital. Patients value your opinion, the doctors value your opinion, the (professional nurses) value your opinion. They (professional nurses) actually treat you like a human being.' P5

[I still say now, if you have a problem with a (professional nurse) in (DH) then the problem is on your side. Wonderful people, a big difference from what you get in (CTH) ... A lovely thing that we have in (DH) that I never had before, we have interdisciplinary rounds where doctors, nurses, the psychiatric sister, dietician, physiotherapist, occupation therapist, everybody is together on rounds.'] P1

Many felt that their clinical learning was facilitated by the flexibility in an integrated programme:

'Well, I look at the theatre list, and if there's something I feel like I haven't done often enough, I will go to theatre and assist. I've done, I think, five circumcisions on my own already. Then I'll decide if I want to go to the women's ward or the men's ward. I try to alternate it, every second week I'm in a different ward, and then I have to decide between casualty or clinic ... It's very interchangeable.' P12

['It is excellent. You sit in outpatients or casualty, if you are not working in the wards, and the patients come, of course each with their own complaints and problems, and it teaches you really how to think of somebody as a whole. Not as a woman with a uterus and a baby in it, but she also has a heart and lungs and a GIT and everything else can also be sick. I think it is more of a holistic approach instead of a systems-based one.'] P13

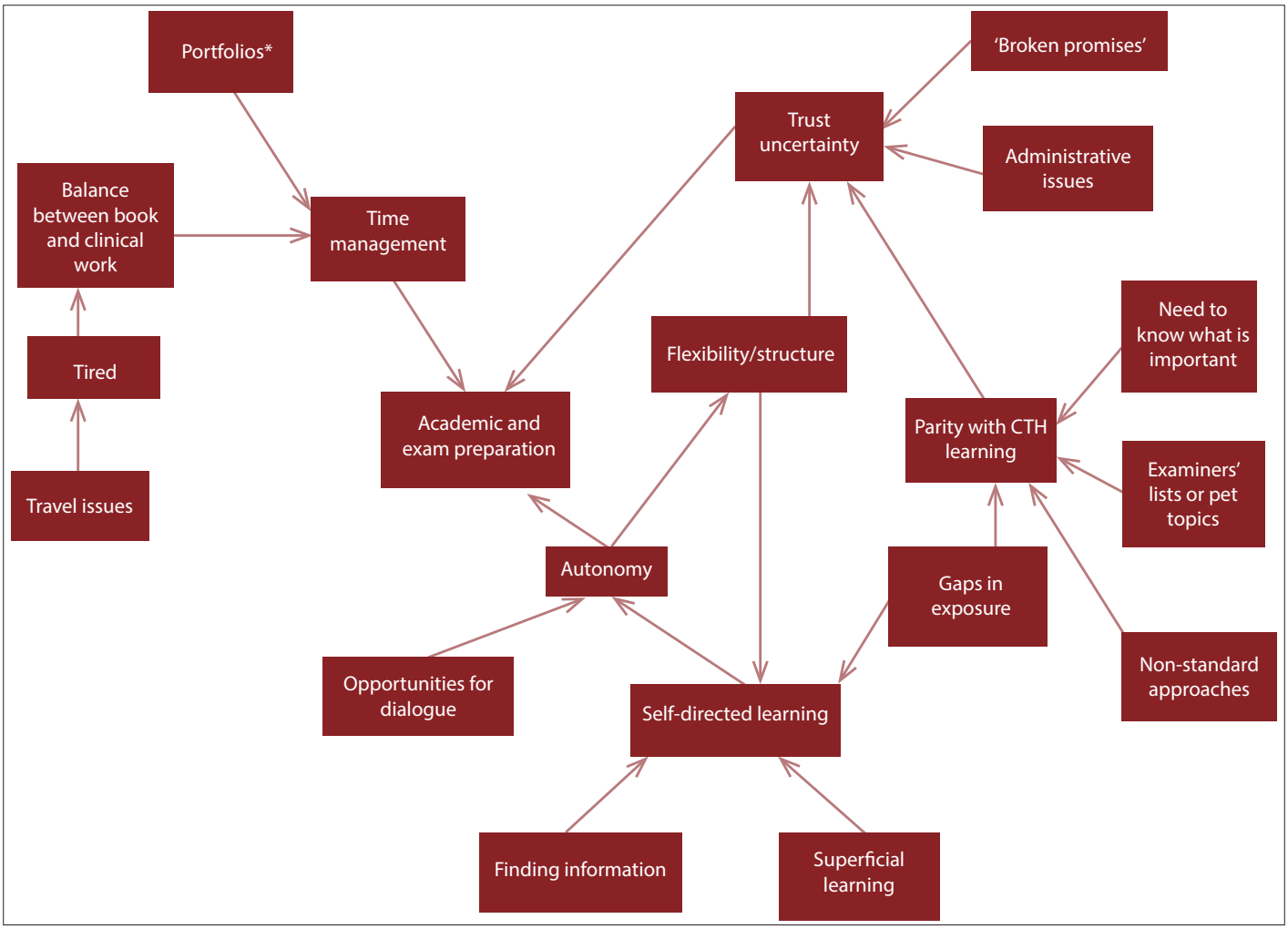

Fig. 2. Thematic network for academic/exam preparation. (Compulsory portfolio of clinical cases)*

Academic learning and exam preparation

Regarding their academic learning and exam confidence (Fig. 2), opinions were far less positive. It was very clear that self-directed learning was necessary and some students felt more comfortable with this than others; the lack of structure that several students felt had facilitated their clinical learning was more problematic when it came to academic learning:

'The hardest part for me was the lack of structure … because we are running around like headless chickens now because we didn't have deadlines, and we didn't realise we are actually behind.' P8

['Then you have all these other things that you must also do and through which you must work, that you postpone, and in the end it builds up and then you sit, as I'm now sitting, with a crisis that you take a day at a time. I think there is something missing. It's missing more of a structure.'] P6

Some students showed considerable self-efficacy in meeting academic challenges:

['I think that the success you achieve comes from you yourself, and if it isn't a success, you can only be cross with yourself.'] P9

However, there were frequently expressed anxieties about 'not knowing what to know' or being able to identify their own knowledge gaps:

['How can I say? There is a famous quote that says "you only think of what you know and you only recognise ..." that one. And this month, I haven't yet – I haven't known what there is to think about.'] P10

Referring to the specialist tutorials at the RRH, one student said:

['Our expectations and the expectations from the specialists' side weren't always well matched. We were expecting them to identify important topics for us and help us to identify our knowledge gaps. They were expecting us to bring our knowledge gaps that they would then fill in. I think we are not in a position … you cannot identify your own knowledge gaps, because you are there, things that are expected of you there – that you can do, but then you must come here (RRH) and now suddenly, to specialist standards, try to identify where you are falling short, and I think that is difficult.'] P4

It was also apparent that many students lacked confidence in the nature of their academic learning. This was largely contributed to by concerns about parity with learning at the teaching hospital and the implications for what they would be asked during the exams:

'… and like when I go to (CTH) and I hear from my friends and they say, oh no, you're supposed to know this, oh no, you're supposed to know that, and you're sort of like, oh no, they didn't tell us that, we were taught this instead.' P2

'The whole problem is that we know the basics and we are being taught the basics at (DH). I mean, those people aren't specialists, so we know what we should know at internship level, but we are going to be assessed on a tertiary level, and they expect more at (CTH), and we don't get taught the more that they expect.' P8

['... at the moment there is a great uneasiness in your soul, because you don't know ... yes, you don't know what the guys in (CTH) have done and how they are doing it. It is important because your end of year exam you are going to write there, so you must have half an idea what they should do.'] P1

Students felt that while they had seen an appropriate caseload for their future practice, they were very worried that they had not seen the 'weird and wonderful' cases they assumed they would be given during the exams:

['You see, say, 50 people a week in internal medicine that have one or other respiratory infection, and it's all normal TB and pneumonia, but in (CTH for exams) you are going to get somebody with cystic fibrosis or some or other type of thing that you have never seen in your life.'] P3

['I'm worried that they are going to give us weird things, because (CTH) is just the tip of the pyramid and all the weird things go there.'] P1

While they generally felt that their clinical learning was well supported, several noted that district hospital approaches were often protocol-driven and they were often not able to understand mechanisms or reasoning behind the approaches. While this was a frustration for some students:

['The whole science behind it, they can't explain to you because, I mean, they also just read it through quickly before they had their exams.'] P3

'So, I do understand the place for protocol, but the protocols, all the different protocols there, sort of … somebody else has done the thinking work and now it's just being implemented. So whenever I had a question, but why is this a protocol, why is this being done or this not being done, then I couldn't really find an answer ... I mean, pathophysiology … doesn't come into play with the protocol. Somebody else thought of it, and now it's just being implemented.' P10

['We just learn the relevant things about how to manage a patient, but that bit extra, I'm looking for that bit extra.'] P4

['…in the end, to be a good doctor, a good balanced doctor, you need that depth.'] P6

Others saw it as their responsibility to find answers and contribute knowledge to their DH colleagues:

['Often we can help them because we have more, in some areas, we have a bit more up-to-date knowledge that they also ask us for sometimes, and it does so much for your self-confidence.'] P9

However, they felt it was not always easy to find answers and this was a further cause for concern:

['So it feels to me that I missed out on many learning opportunities because I never got an answer.'] P10

['I really feel that we are on a correspondence course ... you must just search in a book and you must see if you can find a video of it on YouTube. Often you learn it and then it is that not the same way the guy in (RRH) or the guy in (CTH) does it and then you are wrong anyway ...'] P3

While students largely appreciated the rich clinical exposure, most found it difficult to balance clinical time with study time:

['I think my greatest limitation was time. You want to be as much as possible in the hospital because you learn so much, but it's a bit of a different type of learning … to spend as much time as possible in the hospital means little time for books and I think you must just plan your time well, and to do that is also an art.'] P13

'We spend very long hours in hospital, and I am struggling to find the time to actually study, and struggling to find that balance ... It's very hard in that sense also.' P8

Many stated they were tired, and this was compounded by the need for travel for tutorials or assessments, which they felt was often not appreciated by university administration:

['I must say, at the beginning of the year (laughs), the first three weeks, I was on the floor every evening when I got home ... I don't think that (CTH's) people realise that if they organise an exam for half past nine in the morning, it means we have to get up at five o'clock and leave just before six to be on that side in time.] P1

Several of the students felt they had not been provided with the academic support they were promised; this was particularly related to some planned online tutorials from the CTH in 2011 which could not be provided for technical reasons:

'When we came here, we were expecting to get podcast tuts (tutorials) or video tuts from (CTH). That's why I was a little bit more okay with it,

because like I said, I'm used to being spoon-fed, so I was thinking that spoon-feeding would continue at least because I would get those tuts from (CTH), and nothing happened. So, that didn't work.' P5

['I thought it would be all right Monday, Tuesday, Thursday, Friday, to be just with the family physician, and then every Wednesday, 8 to 5 you're going to have time with every single specialist, and then when we got here, that changed. So that was a big let down. I didn't expect I would have so many questions that I wouldn't get answers to.'] P10

['Then the RCS people should just be honest about what is going to happen and not promise things that aren't going to happen. So I would recommend that those things are in place ... That is the first thing, and then the second thing is, I would like to have it that students going must know exactly what to expect.'] P11

Other administrative issues had also unsettled them:

['Something that really bothered me is the uncertainty. Not uncertainty that I want to be certain about everything, because you can't be, but the structure of the rural school isn't in place yet. We have had a great deal of admin issues this year with the academic days, the evaluations, changes and cancelling of exams ...'] P10

['It feels as if, because we are a smaller group, there is a tendency towards – I almost want to call it – laxity. I think it mustn't be like that. We are their satellite campus, but we must be in line with what is happening there. So there must be a programme that is introduced and you must stick to it. I think the structure can be worked on.'] P13

Discussion

Much attention has been recently focused on the low densities of health professionals in sub-Saharan African countries.[6-8] However, a 2011 report by the Sub-Saharan Medical School Study indicated that many African countries are in the process of a substantial scale-up of medical education; the total enrolment of the 96 responding medical schools was 18 349 compared to a total graduation class of 7 861 the previous year.[9] The South African government has mandated a substantially increased number of medical graduates, from 1 300 annually to 2 300 in 3 years' time,[10] but this challenge exceeds the capacity of the clinical learning platform in tertiary hospitals.

If district hospital training, such as is offered by the LIM, is to fill this gap it needs to be as attractive, efficient and effective as possible to encourage students to leave their comfort zones and their social networks behind, and maintained quality needs to be demonstrated.

When the text segments related to 'preparation for being a doctor' were analysed, it was clear that the students felt that they were working in a supportive learning environment and the lack of structure in the LIM was generally seen as providing a flexibility that allowed them to explore and direct their clinical learning. However, the students had mixed opinions on their academic learning and preparation for exams, and their comments offer insights into the challenges that both students and those responsible for managing these programmes must deal with.

The few students who expected DH staff to provide academic learning were disappointed, and several articulated the opinion that the academic component of the LIM was a 'distance learning' or 'self-study' approach. The requirements for successful autonomous learning have been studied and include the opportunity for dialogue and clearly communicated expectations.[11] Students in the LIM had limited opportunities for dialogue and several expressed doubts about whether they were learning the 'right' things. These issues could be appropriately addressed using electronic methods, such as discussion boards, where peer-to-peer learning could take place between LIM students and their counterparts at the RRH or CTH who have access to specialist opinion.

If students find that their learning is relevant for practice but not for assessment, the relevance and value of the assessment should be questioned. However, the LIM students should graduate with a comparable academic knowledge to those who have been trained by specialists and it would be wrong to dismiss the students' concerns about the academic component of the LIM as just a problem of inappropriate assessment. To date, students at the RCS have performed at least as well on examination as those who remained on the urban campus (Van Schalkwyk *et al.*,[12] elsewhere in this edition) but we do not know whether there has been a cost in extra effort or student stress levels to achieve this.

As with any new programme, early pitfalls and problems occurred, particularly administrative issues, and these frustrations compounded the uncertainty around academic learning. Although students differed in how they dealt with these challenges, academic emotions have an impact on learning and achievement: frustration and anxiety are unpleasant emotions and even though they may motivate learning to avoid failure, they may reduce intrinsic motivation because they are incompatible with enjoyment.[13] Negative academic emotions may also 'trigger the use of more rigid [learning] strategies'[13] instead of the flexible, creative and critical learning strategies required in the longitudinal programme, strategies that are associated with positive academic emotions.[13] The positive emotions generated by the supportive working atmosphere and sense of achievement were, to some extent, in tension with the anxiety and occasional frustration generated by administrative and exam-related issues; we can perhaps do more to create an environment where students can reach their academic learning outcomes with reduced anxiety by aiming for administrative certainty and stability together with clearly communicated academic expectations. However, while a lowering of the demands of the LIM model may increase its popularity and uptake, this may also dilute the potential for personal growth that the LIM offers students. Achieving a balance between challenging students and increasing enrolment may be difficult. Nonetheless, curriculum changes that will provide more structure for LIM students are being developed for 2015.

Conclusions

While students were generally very happy with their clinical exposure and the clinical learning environment on the LIM, a critical analysis of their experiences indicated several shortfalls that can be addressed to cultivate positive academic emotions and increase the acceptability of the programme among the student body. Principally, there is a need for impeccable administration, clearly communicated expectations for learning particularly regarding examinations, and mechanisms for dialogue where students can be confident about parity of academic learning with their counterparts who are trained on a traditional platform.

Acknowledgements. Funding from the Stellenbosch University Rural Medical Education Partnership Initiative (SURMEPI), which is supported by the US President's Emergency Plan for AIDS relief (PEPFAR) through Health Resources and Services Administration (HRSA) under the terms of T84HA21652, is gratefully acknowledged. The authors also acknowledge the other members of the research team: M de Villiers, B van Heerden, J Blitz, J Bezuidenhout, T Fish and N Kok.

References

1. Daniels-Felix DK, Conradie H, Voss M. Choosing final year placement: Why students decide not to go rural. Afr J Health Professions Educ 2015;7(1 Suppl 1):111-114 [http://dx.doi.org/10.7196/AJHPE.508]
2. Strasser R, Hirsh D. Longitudinal integrated clerkships: transforming medical education worldwide? Med Educ 2011;45(5):436-437. [http://dx.doi.org/10.1111/j.1365-2923.2011.03939.x]
3. Van Schalkwyk S, Bezuidenhout J, Conradie H, et al. 'Going rural': driving change through a rural medical education innovation. Rural and Remote Health 2014;14(2493). http://www.rrh.org.au (accessed 13 February 2014).
4. Van Schalkwyk S, Bezuidenhout J, Burch V, et al. Developing an educational research framework for evaluating rural training of health professionals: A case for innovation. Med Teach 2012;34(12):1064-1069. [http://dx.doi.org/10.3109/0142159x.2012.719652]
5. Attride-Stirling J. Thematic networks: an analytic tool for qualitative research. Qual Res 2001;1(3):385-405. [http://dx.doi.org/10.1177/146879410100100307]
6. Kumar P. Providing the providers - remedying Africa's shortage of health care workers. N Engl J Med 2007;356:25. [http://dx.doi.org/10.1056/nejmp078091]
7. Kinfu Y, Dal Poz MR, Mercer H, Evans DB. The health worker shortage in Africa: Are enough physicians and nurses being trained? Bull World Health Organ 2009;87:225-230. [http://dx.doi.org/10.2471/blt.08.051599]
8. Naicker S, Plange-Rhule J, Tutt RR, Eastwood JB. Shortage of healthcare workers in developing countries - Africa. Ethnicity and Disease 2009;19:S1-60-S1-64.
9. Mullan F, Frehywot S, Omaswa F, et al. Medical schools in sub-Saharan Africa. Lancet 2011;377:1113-1121. [http://dx.doi.org/10.1016/S0140-6736(10)61961-7]
10. Bateman C. Doctor shortages: Unpacking the 'Cuban solution'. S Afr Med J 2013;103:603-605. [http://dx.doi.org/10.7196/samj.7323]
11. Ally M. Foundations of educational theory for online learning. Theory and Practice of Online Learning 2004;2:15-44.
12. Van Schalkwyk S, de Kok N, Conradie H, van Heerden B. Academic achievement on a rural clinical platform: Can we dispel the myths? Afr J Health Professions Educ 2015;7(1 Suppl 1):115-118. [http://dx.doi.org/10.7196/AJHPE.513]
13. Pekrun R, Goetz T, Titz W, Perry RP. Academic emotions in students' self regulated learning and achievement: A programme of qualitative and quantitative research. Educational Psychologist 2002;37:91-106. [http://dx.doi.org/10.1207/s15326985ep3702_4]