CHAPTER 4
RESULTS AND DISCUSSION:
UNDERSTANDING THE REQUIREMENTS OF THE NEW CURRICULUM

This chapter presents the results involving curriculum developers’ and teachers’ understanding of the requirements of the new curriculum in Lesotho. The analysis of data is done with the purpose of finding the emerging trends so as to answer research questions 1, 2, 3, 4 and 5, and the results in this chapter are presented based on the research questions.

4.1 THE REQUIREMENTS OF THE NEW CURRICULUM IN LESOTHO

My interest was to investigate teachers’ understanding of the requirements of the new curriculum as a factor that could affect the implementation of the new curriculum. In order to do this I first had to establish what those requirements are, and I structured the first research question.

Research Question 1: What changes does the new curriculum require teachers to make in their classroom?

4.1.1 Requirements spelled out in the syllabus document

The obvious starting point was an analysis of the syllabus document. The conclusions drawn from an analysis are presented in Chapter 1, section 1.3.2, pages 4-15. From that analysis, the following summary of the requirements of the new curriculum is made. The new curriculum requires four changes.

- A learner-centred approach should be used. The syllabus document does not explain learner-centredness. However, an analysis of the literature on learner-centredness reveals that it involves acknowledging learner differences and preparing instruction accordingly, as well as allowing learners some choices in what and how they learn.
- Learners should be actively engaged in the learning process. According to the literature this means learners should be actively involved in their lessons in a meaningful and purposeful way, which should help them to develop the necessary conceptual understanding.
- Learners should develop a range of science-related skills, which are meant to “enable the learners to adapt, utilize, invent and influence the scientific, technological and socio-economic changes locally and globally.” (Ministry of Education and Manpower Development, 2002, 1).
- Learners should acquire appropriate scientific attitudes, which “will be used in survival in the rapidly changing world, and applied for improvement of life in society as well as the quality of the environment.” (Ministry of Education and Manpower Development, 2002, 1).

The requirements were written briefly, and not made very explicit in the syllabus document. For instance, the term “learner-centred” was used but not defined. Furthermore, the wording in the document suggested that perhaps the authors of the syllabus might have believed that a learner-centred
approach is the same thing as actively engaging learners in the learning process. The problem with this interpretation is that it leaves out very important features of the learner-centred approach, as discussed in Chapter 1, pages 5-9. Although some skills and attitudes to be developed are mentioned in the syllabus, they were very limited. The next step, therefore, was to interview some of the curriculum developers who were responsible for the development and dissemination of the new syllabus document so that they could shed more light on what changes teachers are meant to make.

4.1.2 Curriculum developers’ views about what the requirements are

The curriculum developers were specifically asked what changes they considered the new curriculum to require that were different from the old curriculum. In answer to this question the curriculum developers identified the requirements summarized in Table 6 below. None of the panel members interviewed gave all four requirements of the curriculum as had been deduced from the syllabus document. Two of them indicated that actively involving learners in the learning process is a requirement. One curriculum developer saw the acquisition of skills as a requirement. However, none of them volunteered making lessons learner-centred as a requirement, and none mentioned the development of appropriate attitudes.

<table>
<thead>
<tr>
<th>Table 6: Curriculum developers’ identification of requirements of the new curriculum</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Curriculum Developer 1</strong></td>
</tr>
<tr>
<td>Requirements of the new curriculum deduced from the syllabus</td>
</tr>
<tr>
<td>1. A learner-centred approach should be used</td>
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<tr>
<td>2. Learning should be activity-orientated</td>
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<td>3. Skills must be developed</td>
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<td>4. Learners should acquire appropriate attitudes</td>
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<tr>
<td>Other requirements identified by the curriculum developers</td>
</tr>
<tr>
<td>The curriculum should be relevant</td>
</tr>
<tr>
<td>Teachers should use learning outcomes to guide lessons</td>
</tr>
<tr>
<td>The curriculum must bridge the gap between COSC⁵ and university</td>
</tr>
</tbody>
</table>

However, several other “requirements” were put forward. Two of the four curriculum developers mentioned making the curriculum relevant as a requirement.

“... the instructional material should be relevant, because previously the materials that were developed were very much foreign.” (Curriculum Developer #1, lines 55-56)

“... we wanted science that could be relevant ... learners are supposed to own science, so that they can apply and use it. Science has been content driven, so they couldn’t apply

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⁵ COSC is how Lesotho teachers refer to the Cambridge Overseas School Certificate, which is an O-level qualification. The examination is written at the end of the Form E year (Year 11 equivalent) and follows a two-year curriculum (Form D and E).
it in real life. So that even if they could not continue with schooling or science, they could be able to use what they learned in science ... use apparatus etc.”

(Curriculum Developer #4, lines 520-23)

I hadn’t identified relevance as a requirement when I first analysed the new syllabus document so I revisited the document to see if I had missed something. The syllabus document states that

“[i]t is hoped that the learners will relate the science they learn through this curriculum to everyday phenomena in their immediate environment and beyond.”

(Ministry of Education and Manpower Development, 2002, 1)

The way it is phrased (“it is hoped that”), gives an impression that this is not a strongly advised requirement, and is just a hope that this will be the case. There is very little emphasis on making relevance a central requirement of the curriculum, and therefore I did not add it to the list of requirements.

Because few of the curriculum developers had volunteered those requirements which seemed to be stated in the syllabus document, I probed further in order to get more clarification on the needs of the new curriculum. One curriculum developer, on answering the question on what teachers are doing now that was different from what they had been doing, indicated that teachers are using learning outcomes. The curriculum developer said

“... what pleases me is the change in the teachers ... because most of them in my area use this syllabus ... they use the learning outcomes. I know that they are only using it partially ... because even [though] the learning outcomes [are implemented] very little ... I could see [they] do influence even their assessment or even influence the nature of the lesson itself. But at least they know the syllabus, unlike before when they were teaching solely using the book. So, there is that move and interest in the syllabus.”

(Curriculum Developer #3, lines 381-86)

From my experience as a teacher in Lesotho I know that teachers tend to use textbooks to guide their teaching more than they use the syllabus document. This has always been a point of concern. I therefore understand why the curriculum developer felt pleased that teachers are using the learning outcomes. I reviewed both the old and new syllabus and observed that the term “outcomes” (the one the curriculum developer is referring to) is new. Although similar outcomes were specified in the old syllabus, they were called “objectives”. It was also not added to my list of requirements, as only the name was new not the requirement.

A third additional requirement mentioned during the interviews was to bridge the gap between school and university.

“...the old syllabus was meant ... tailor-made to fit into the COSC curriculum then. But the revised [syllabus] was meant to take learners to university, as the entry qualification, which never worked out ...”  

(Curriculum Developer #1, lines 39-41)

Although I had asked what changes were in the new syllabus (wanting to find out the new requirements), this answer suggests a reason for making the changes, rather than a requirement of the new curriculum. It was also, therefore, not added to my list of requirements.

Having analyzed the new syllabus document I felt it would also be appropriate to look at the old syllabus document to see if these requirements are really new or if they have always been there. The
results of the analysis of the old syllabus show clearly that using a learner-centred approach is a new requirement. The heavy emphasis on involving learners actively in the learning is also new. The old syllabus gave a vague statement about learners doing activities “pupils should ...be equally exposed to practical experiences in physical and biological science” (Ministry of Education, Sports and Culture, 1986, 3) but the new syllabus puts much more emphasis on activities and provides more detail. The development of skills has always been emphasised in the old syllabus, as indicated by the following quote in the introductory section of the old syllabus.

“Pupils should be able to develop the scientific skills of observation, estimation, measurement, experimentation, construction, interpretation and analysis of data, inferring, hypothesizing, predicting, scientific communication and thinking.”

(Ministry of Education, Sports and Culture, 1986, 3)

The new syllabus makes much more emphasis on development of skills as will be shown later in Chapter 5. The acquisition of attitudes is also more emphasized in the new syllabus than was the case in the old syllabus.

4.1.3 Curriculum developers’ perceptions of the four requirements of the new curriculum

It is important to establish from the outset the meaning of the terms used in the new curriculum, as curriculum developers’ and teachers’ lack of understanding of these terms could hinder successful implementation. The following sections will look at the curriculum developers’ perceptions of these terms, as identified during the interviews.

Curriculum developers’ perceptions of “learner-centredness”

Learner-centredness seems to be an important requirement of the syllabus, and as such it was important to ask a specific question relating to it.

Research Question 2: What did the curriculum developers mean by “learner-centred”? (in the syllabus document)

As discussed in Chapter 1, the literature (e.g. McCombs and Whistler, 1997) indicates that there are two important characteristics of a learner-centred approach. The first is that teachers recognize and accommodate learner differences. This includes differences in their cultural backgrounds; beliefs and practices; experiences and prior knowledge; learning abilities and pace of learning; and preferred learning styles. The second feature of learner-centredness is that teachers should allow learners some margin of choice about what and how they learn. The curriculum developers were asked to explain what the term “learner-centred” (which occurred in the syllabus document) meant. Using the above-mentioned characteristics as a base, the following conclusions could be drawn from the curriculum developers’ answers.

The four curriculum developers seemed to have different interpretations of what “learner-centred approach” meant, as discussed below.

• An adequate explanation of the term: Only one curriculum developer gave a good explanation (based on what the literature says) of the concept of learner-centredness. He started by
indicating that “… there are three levels that I consider which I say is learner-centred” (Curriculum Developer #2, line 223). He explained that he had done a study on learner-centredness, and the three levels he used for explaining learner-centredness were based on those in a paper by two South African authors. In the first level he indicated that “they quote about the relationship and caring” (Curriculum Developer #2, line 222). However, developing a relationship of caring is a characteristic of all good teachers, even in ordinary classrooms that are not learner-centred. He said that the second level involved pedagogy. It was not clear from his explanation what this curriculum developer meant by pedagogy, so I went and checked the paper by the original authors which the curriculum developer cited. The authors’ explanation entails “choosing examples and contexts that relate to students’ interests, and helping them to extend and reconstruct their knowledge in ways that engage diversity” (Malcolm and Keane, 2001, 3). This quote acknowledges that learners have different interests and different ways of learning. The curriculum developer indicated his understanding of this later in his statement “some of them can prefer learning about them in different way.” (Curriculum Developer #2, lines 227-228)

The third level to which he referred involves learners making their own choices. The curriculum developer linked this to the learners’ preferred learning styles. “... the third one is about allowing the learners to select their own outcomes. That implies you are not saying they have to go their own way, but they are selecting ... a topic to learn in their own way. For instance, if you were talking about forces, some of the students will prefer to learn about forces using tug-of-war, you see. Some of them will prefer using sliding down the steep hill themselves using something. Some of them can prefer learning about them in different ways. Some will prefer to be lectured about a certain topic.” (Curriculum Developer #2, lines 223-228)

Although his discussion refers to the two most important features of learner-centredness it still leaves out catering for learner differences other than preferred learning styles, such as accommodating different cultural backgrounds, beliefs and practices, and also learners’ experiences and prior knowledge.

- **Explanations at “the obvious” level**: One curriculum developer gave an explanation that Sanders and Kasalu (2004) would refer to as an “obvious” description of “learner-centered approach”, simply stating that learners are central to learning. This curriculum developer defined learner-centred as a

  “process that starts and centres on where the learner is, and going with the learner and challenging what is there.” (Curriculum Developer #3, lines 398-90)

The first part of the response gives the impression of an “obvious definition”. However, *going with the learner and challenging what is there* suggests a possible understanding that learners’ prior knowledge has to be checked and learning built on that. But this is not stated explicitly enough to allow me to make the decision that this definition goes beyond the “obvious level”.

- **Explanations that do not give characteristics of learner-centredness**: Another curriculum developer explained learner-centredness in a way that does not include the characteristics of
learner-centredness indicated in Chapter 1. The explanation of “learner-centredness” provided by Curriculum Developer #4 focused on making science relevant to students’ lives:

“we wanted a learner-centered ... we wanted science that could be relevant. Learners are supposed to own science, so that they can apply and use it”.

(Curriculum Developer #4, lines 520-21)

This answer seems to suggest that this particular curriculum developer equates “learner-centred approach” with “relevance”.

• “Learner-centredness” equated with actively engaging learners in the learning process: The features one curriculum developer used in describing learner-centredness, such as teachers acting as a facilitator to help learners discover things rather than transferring knowledge, is a feature of activity-based learning rather than of “learner-centredness”.

“We want teachers to facilitate learning not to transfer knowledge ... so that they can help learners to discover things for themselves, as what you discover you know better and you develop interest on.”

(Curriculum Developer #4, line 526-527)

Although the syllabus document developed by these curriculum developers clearly states that a learner-centred approach is required, the curriculum developers’ responses when asked what they believe the term “learner-centred” means revealed a range of perceptions of learner-centredness, as well as uncertainty about what it means. Furthermore, some seemed aware that there is a problem, for instance,

“Eh ... in fact, there were a number of in-service training in the learner-centredness ... eh ... of which ... as it was a new thing... and our understanding of learner-centered has differed. In fact, even the way we practice it is very much different. Probably one of the factors is the resources we have.”

(Curriculum Developer #1, lines 61-64)

Another curriculum developer, when asked whether the other curriculum developers see learner-centred the way he does, said “no”. In addition he pointed out that even teachers do not understand it well.

“Even teachers ... they do not understand ... What they do is they have a limited understanding of learner-centred, they think learner-centred is “hands-on” ... that is, when you put practical that is descriptive in terms of the ... as a recipe type of practical, whereby you say mix one, add two, then look at the colour, what is the colour? and then do that. They believe that is learner-centred ... as long as learners are doing something.”

(Curriculum Developer #2, lines 241-46)

One curriculum developer, was specifically asked about this:

“[s]o do you think ... if you as curriculum developers are not sure or see it differently, is it possible for teachers to understand what is expected, if the curriculum developers and inspector are all saying different things about learner-centered?”

(Researcher)

He acknowledged that there is confusion in as far as understanding of the concept is concerned.

“It is actually a mess, if you look at it that way, if the curriculum developer understanding is different from inspectors, teachers and examiners.”

(Curriculum Developer #1, lines 72-74)
Educational reforms world-wide emphasize a learner-centred approach (Ottevanger, 2002). However, because of the nature of its name, which seems to have such an obvious meaning, many people may not find it necessary to delve deeper and find its actual meaning. Taking learner-centredness at face value may have important implications for those who are intending to implement a curriculum which is truly learner-centred. However, the gist of learner-centredness as discussed in the literature (see Chapter 1) is on teachers acknowledging that learners are different, and accommodating these differences when preparing and implementing lessons. Most of these important features are not obvious from some of the curriculum developers’ answers.

Curriculum developers’ perceptions of “activity-based”

Activity-based learning is another requirement that needs to be explicitly explained, hence the following question was asked.

Research Question 3: What do the curriculum developers understand by “activity-based”?

Actively engaging learners in the learning process is another requirement that I deduced from the Lesotho syllabus document. As indicated in Chapter 1, the term “activity-based learning” is not mentioned in the syllabus document, but appears on the cover of the first set of prescribed textbooks, for which three of the curriculum developers were authors. The cover states that “[t]he course is activity-based and gives students hands-on experiences” (Mpeta et al., 2002). If the curriculum developers intended activity-based learning to be a requirement of the new curriculum it should clearly be stated as such in the syllabus document.

Activity-based learning is a rather elusive concept. In activity-based learning activities should form the basis of learning, to allow learners to construct concepts through doing the activities (Prince, 2004). It is seldom distinguished from activity-orientated learning, where activities may come after teachers have explained the concept, and the activities are usually done to verify facts already taught. It was important to find out the curriculum developers’ perception of the concept being a requirement of the curriculum. They were asked what they thought is meant by “activity-based learning”.

The trends emerging from the answers included:

• Definitions of the term at the “obvious” level: Two of the curriculum developers who answered this question focused on the obvious – that learners should be engaged in activities – but gave no clear indication of the purpose those activities serve. For instance,

  “that is where learners do activities ...whether from teachers or on their own”
  (Curriculum Developer #1, line 113)

  “Do activities, but I don’t think activities on their own can be that much.”
  (Curriculum Developer #3, lines 447-448)

• Definitions that equate activity-based learning with hands-on activities: Another curriculum developer’s answer to the question seems to indicate that the curriculum developer perceives engaging learners in activities to be confined to doing practical work and manipulating apparatus.
“Do activities that will show that they have grasped the concept. When they do hands-on manipulating apparatus … they learn manipulative skills, so they know … instead of rote-learning things.” (Curriculum Developer #4, lines 556-557)

Further probing was used to get more details as “to show that they have grasped the concept” implies activities coming after understanding, and not being used to develop their understanding. The curriculum developer was asked why an activity-based approach was recommended, and the curriculum developer indicated that

“… [I]t gives feedback to the teacher as to how much they understand.”

(Curriculum Developer #4, line 559)

This response seems to focus on only one part of engaging learners, which is hands-on activities and leaves out another equally important part, that activities should form the basis for the development of knowledge.

- Definitions that show confusion between the terms “activity-based learning” and “learner-centred approach”: Further responses to a question which asked curriculum developers to define the term “activity-based” indicate the confusion that exists in the usage of the terms “activity-based” and “learner-centredness”. For instance, when asked how teachers are expected to make their classrooms activity-based one curriculum developer believed teachers can make classrooms activity-based in the following manner

“…teacher to set up the apparatus and ask the learner to do the activity. Another way … here to take it probably more teachers’ ideas being imposed on learners. He contrasts this with learner-centred approach. In another setting, where I consider it (to be a) more learner-centered approach, would be the learners to come up with apparatus which could demonstrate that themselves. This is how, maybe, I would consider it to be activity-based but learner-centred. The other one is activity-based but teacher-centered. Because they can do the activities but may not learn anything, but if the idea is probably from them, then there could be something that is learned in the process.”

(Curriculum Developer #1 lines 123-28)

This response suggests that the curriculum developer believes that if learners are actively involved, that is activity-based learning, and that depending on whether the activities come from the teacher or from learners then learning can be teacher-centred or learner-centred.

A response which indicates that at least one curriculum developer seems to see activity-based as a sub-set of learner-centred is

“Activity-based is a method of being learner-centred, while learner-centred education is a bigger umbrella of different methods one of which could be activity-based.”

(Curriculum Developer #2, line 325-27)

This is correct to a certain extent, as the curriculum developer is not equating activity-based learning with learner-centred approach but acknowledges that they share some common features. But the explanation does not get to the crux of activity-based learning which is using activities to construct knowledge.

As I already mentioned in Chapter 1 the two concepts (learner-centredness and activity-based learning) are different although they both include actively involving learners. This needs to be made
clear to teachers, so curriculum developers or facilitators need to understand these differences before they can communicate the information to the teachers.

Curriculum developers’ perceptions about the teaching of skills

The syllabus requires learners to develop scientific skills, as I indicated in Chapter 1, pages 11-13. When asked how they expect teachers to teach the skills I found it difficult to get clear answers as the interviewees either evaded the question or gave responses that did not answer the question. For instance, Curriculum Developer #2 did not answer it at all, and Curriculum Developer #1 said

“Teaching about skills and attitudes? Eh ... skills is not bad. It is easy to see when somebody has acquired the skill.”  
(Curriculum Developer #1, lines 139-40)

Another curriculum developer gave an equally non-committal answer:

“He aa (Hey, no) they have to teach them. I don’t know because there is not that explicit. It is mentioned but ...”  
(Curriculum Developer #3 line 452)

One curriculum developer believes that teachers need to be motivated before they can be requested to teach skills and attitudes, and that the examinations should include attitudes and skills as teachers look at what the examiners want. The curriculum developer stated that

“In fact the biggest problem ... you need to motivate teachers, once you talk about such things. So in fact in any system, if you have those good things on paper and you don’t have teachers that are motivated, those changes will just remain on paper. They will never get to the classroom. But if our examination will have such things our teachers will always look at what is in the examinations.”  
(Curriculum Developer #1, lines 148-151)

This implies that for the requirements to be properly implemented important things like examinations have to change. Meanwhile the teaching of skills seems to be left to the discretion of the teacher as one curriculum developer commented that

“But we don’t know how they are going to teach them. One will have to think of how they should be taught, which I think is what they are trying to do hana tjena (now).”  
(Curriculum Developer #3, lines 470-71)

Curriculum developers’ perceptions about the teaching of attitudes

Development of appropriate attitudes in science is an important factor in the learning of science, as indicated in Chapter 1, pages 13-15. Yet development of attitudes seems to be the least considered requirement of the new curriculum. On being asked how teachers are expected to help learners develop the appropriate attitudes, three of the four curriculum developers interviewed did not give answers. Only Curriculum Developer #4 indicated that teachers could help learners acquire positive attitudes in topics such as managing the environment. Curriculum Developer #4 believes that when learners realize that science can be applied in solving problems of the environment learners can have a positive attitude, and Curriculum Developer #4 suggested that teachers should

“let learners do things ... get involved in activities that are interesting and motivating.”  
(Curriculum Developer #4, lines 564-65)
4.1.4 Concluding remarks

The above observations indicate that although the curriculum developers developed the syllabus document, which implied four requirements, the curriculum developers didn’t seem to clearly see all four as important requirements. This is a matter of concern because curriculum developers play an important role in implementation. In Lesotho, for instance, panel members visited schools during the piloting phase to monitor and ensure that the new curriculum was being put into practice, meaning they acted as change agents. Change agents are expected to have expert knowledge about the innovation and how it is to be used, and are expected to lead teachers towards successful implementation (Hall and Hord, 2006). So if they are not clear that there are four important requirements, it is unlikely that this is being passed on to the teachers. Hall and Hord (2006) point out that when there is confusion about what a curriculum involves, then confusing messages are given to teachers and the teachers, in turn, respond by creating their own version of what they think the curriculum requires, which may not be what curriculum developers intended. As a result, teachers’ ideas may be very far off the mark.

4.2 TEACHERS’ UNDERSTANDING OF THE REQUIREMENTS OF THE NEW CURRICULUM

For the successful implementation of the new curriculum it is important that teachers understand what the curriculum expects them to do, in particular how this differs from what they were doing previously.

4a. believe the requirements of the new curriculum are?
4b. understand by “learner-centred approach”?
4c. understand by “activity-based lessons”?

4.2.1 Teachers’ ideas about the requirements of the new curriculum

To investigate teachers’ awareness of the requirements of the new curriculum and how they put them into practice in the classroom, teachers were first asked what they think the requirements of the new syllabus are. Twenty-eight Junior Secondary Science teachers who attended a workshop in one district in Lesotho completed the questionnaires, and four further teachers were interviewed to probe for in-depth information. Table 7 summarizes the teachers’ views about what they think the new Junior Secondary Science curriculum requires. The following trends were noted.

- A large proportion of the teachers who completed the questionnaires (11 of the 28) did not respond to this question. This suggests either that the question was not understood, or that many teachers simply did not know what the syllabus requires them to do that is different.
Table 7: Frequency of teachers’ ideas about the requirements of the new curriculum (n = 32)

<table>
<thead>
<tr>
<th>Requirements as deduced from the new syllabus</th>
<th>Questionnaires n = 28</th>
<th>Interviews n = 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>No answer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Activity-orientated (n = 13)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The teacher must involve students in activities.</td>
<td>7 (25%)</td>
<td>1 (25%)</td>
</tr>
<tr>
<td>The teacher must put more emphasis on practical work.</td>
<td>4 (14%)</td>
<td>-</td>
</tr>
<tr>
<td>The teacher must give exercises to students after every topic.</td>
<td>1 (3.6%)</td>
<td>-</td>
</tr>
<tr>
<td>Learner-centered (n = 5)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teaching of science must be learner-centered</td>
<td>2 (7.1%)</td>
<td>2 (50%)</td>
</tr>
<tr>
<td>Teacher involves pupils (more pupil-centred)</td>
<td>1 (3.6%)</td>
<td>-</td>
</tr>
<tr>
<td>Features of learner-centred learning (n = 2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The teacher must guide learners through syllabus at each learner’s pace</td>
<td>1 (3.6%)</td>
<td>-</td>
</tr>
<tr>
<td>Teacher to vary his teaching methods to accommodate learners with different abilities</td>
<td>1 (3.6%)</td>
<td>-</td>
</tr>
<tr>
<td>Skills development (n = 6)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teach skills.</td>
<td>5 (17.9%)</td>
<td>-</td>
</tr>
<tr>
<td>Improve teacher’s and students’ reading ability.</td>
<td>1 (3.6%)</td>
<td>-</td>
</tr>
<tr>
<td>Development of attitudes (n = 1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teachers and learners develop positive attitudes.</td>
<td>1 (3.6%)</td>
<td>-</td>
</tr>
</tbody>
</table>

Other responses teachers considered to be requirements

<table>
<thead>
<tr>
<th>Requirements as deduced from the new syllabus</th>
<th>Questionnaires n = 28</th>
<th>Interviews n = 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application of information (n = 6)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Help students apply concepts to real life</td>
<td>3 (10.7%)</td>
<td>-</td>
</tr>
<tr>
<td>Pupils to relate science with other subjects (link concepts)</td>
<td>2 (7.1%)</td>
<td>-</td>
</tr>
<tr>
<td>Help students use information</td>
<td>1 (3.6%)</td>
<td>-</td>
</tr>
<tr>
<td>Relevance (n = 3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Make science relevant</td>
<td>1 (3.6%)</td>
<td>-</td>
</tr>
<tr>
<td>Expose learners to various day-to-day science concepts</td>
<td>1 (3.6%)</td>
<td>1 (25%)</td>
</tr>
<tr>
<td>Resources (n = 3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Schools to have science chemicals and equipment</td>
<td>2 (7.1%)</td>
<td>1 (25%)</td>
</tr>
<tr>
<td>Teacher preparation (n = 2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teachers be more informed</td>
<td>1 (3.6%)</td>
<td>-</td>
</tr>
<tr>
<td>Teachers to read and investigate from many sources</td>
<td>1 (3.6%)</td>
<td>-</td>
</tr>
<tr>
<td>Pedagogical approach (n = 2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>More discussions between learners and teachers</td>
<td>1 (3.6%)</td>
<td>-</td>
</tr>
<tr>
<td>Students are expected to use textbooks</td>
<td>1 (3.6%)</td>
<td>-</td>
</tr>
<tr>
<td>General (n = 1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Move away from traditional method</td>
<td>1 (3.6%)</td>
<td>-</td>
</tr>
</tbody>
</table>

- A similar large number of teachers (13 of them, just under half of the group) correctly indicated that the syllabus expects them to involve learners in activities or in practical work. For example,

  “Activities in class to help students understand concepts.” (Teacher #8)
  “It requires teachers to involve students in activities to enhance learning.” (Teacher #19)

Whilst this is a requirement stipulated in the syllabus document such statements made it impossible to judge whether teachers understood the emphasis on activity-based learning. The wording of many answers suggested teachers are using activities much as they did in the old syllabus (i.e. in an activity-orientated way) rather than using them in an activity-based way to promote the construction of knowledge. Teachers gave answers such as,

  “A lot of practicals” (Teacher #8)
  “Do more practical work i.e be more active in classrooms” (Teacher #24)
“It also requires teachers to do more practicals as to expose learners to various day to day science concepts” (Teacher #26)

None of these answers indicate when the practical work is to be done (neither saying before or after theory).

- Three teachers who completed the questionnaire and two teachers who were interviewed correctly indicated that the syllabus requires them to use a learner-centered approach, while two others gave the features of learner-centredness without using the term, “learner-centred”.

  “Guide learners through their syllabus at each learners pace” (Teacher #3)
  “To vary his teaching methods to accommodate learners with different abilities” (Teacher #21)

- A small proportion of the teachers (six) mentioned that teachers were expected to teach skills. Teacher #7 focused on both the development and the subsequent use of the skills, saying

  “teachers must ensure acquisition of scientific skills and utilization of such skills in class.” (Teacher #7)

This indicates that this particular teacher understands that not only should skills be used but that they should also be taught. However, wording from some teachers’ answers, and elsewhere in the questionnaires, suggested that the other teachers did not actively teach skills – simply required students to use them (a problem identified two decades ago by Beyer and Charlton, 1986). Whether teachers understand that the skills have to be actively taught and that the skills need to be continuously practiced in order to perfect the skill (see Sanders and Kasalu, 2004) is not obvious from their answers. This seems to indicate, at best, a vague understanding of this requirement by these teachers, and at worst, a complete misunderstanding of what they are required to do.

- Only one of the 32 teachers (#7) mentioned the development of attitudes, suggesting that the vast majority of these teachers did not see this as an important requirement of the new curriculum.

<table>
<thead>
<tr>
<th>Requirements</th>
<th>Number of teachers who correctly identified the requirement (n= 32)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Learner-centred approach</td>
<td>7 (22%)</td>
</tr>
<tr>
<td>2. Activity-orientated learning</td>
<td>13 (41%)</td>
</tr>
<tr>
<td>3. Skills development</td>
<td>6 (18%)</td>
</tr>
<tr>
<td>4. Development of attitudes</td>
<td>1 (3%)</td>
</tr>
</tbody>
</table>

The literature indicates that for teachers to successfully implement the curriculum they must understand what it requires them to do. The results in Table 8 show that only a small percentage of teachers in the study 22% (7 of the 32 teachers) understand that a learner-centred approach should be used. This is a matter of concern because using a learner-centred approach is one requirement stated in the syllabus document. A larger percentage 41 % (13 of the 32 teachers) indicated that learners should be engaged in activities in the classroom, although the purpose of the activities was not mentioned. The percentage of teachers indicating that skills should be developed is low (6 out of 32) although the requirement is stated in several parts of the syllabus document. If so few teachers recognize the importance of teaching skills it follows that only a few can make skills part of the learning outcomes. Only one teacher indicated that the curriculum requires development of
appropriate attitudes. This is a matter of concern because the syllabus (the main document) does not put much emphasis on the development of attitudes, so teachers also did not seem to have considered it an important requirement.

- Nine of the teachers, however, indicated that the syllabus expects them to relate science to everyday life and that they should be able to help learners apply what they learned in real life situations, which, as I indicated in section 4.1.2, is not made an important focus in the new syllabus document.

- Eight more teachers gave responses that could not be categorized as requirements, such as
  “Mostly it wanted J.C teachers to be more informed ...” (Teacher #26)
  “Laboratory equipment” (Teacher #8)

**Teachers’ understanding of “learner-centered approach”**

Because learner-centredness is emphasized in the *Junior Secondary Science* curriculum as an approach that has to be used, establishing teachers’ understanding of the term from the onset is very important. One of the workshop activities explored the notion of “learner-centredness”. The activity began with a reflective task in which teachers completed an activity-based questionnaire on what they thought “learner-centred approach” meant. They were asked how sure they were that their answers were correct, and also whether they thought they were implementing this approach in their science classes. During the interviews teachers were also asked to define learner-centredness. The answers from both questionnaires and interview are summarized in Table 9 (next page).

- Nine of the teachers (28%) gave what Sanders and Kasalu (2004) refer to as an “obvious” description of “learner-centered approach”, simply stating that learners are central to learning. Five of these nine teachers were sure that their answers were correct, in spite of the fact that their explanations did not get to the heart of the term “learner-centredness”, which is catering for differences between individuals.

- Eleven of the teachers (nine who completed the questionnaire and two who were interviewed) gave responses that suggested some features of learner-centredness, such as recognizing learners interests and abilities. For example one teacher said:

  “learner direct approach of teaching that involves the learner through all stages. Their interests and questions should direct the teaching process. Their abilities too.”
  (Teachers #7)

Another feature mentioned by two teachers implies taking learners’ pace into consideration, as shown by the following quote from one teacher.

  “Learners study/learn what they are capable of learning at their own pace, with diverse learning aids.”
  (Teacher #3)

Another feature mentioned by two other teachers involves diagnosing prior knowledge of the learner, as illustrated in the following quote by one teacher.

  “What is taught is determined by where the learner is in terms of her background in relation to concept/skill to be introduced. The learner is guided towards self-discovery.”
  (Teacher #23)
These are all important features of learner-centred classrooms. This indicates that 11 teachers do understand at least some of the features of a learner-centered approach (see Table 9 on the next page).

**Table 9: Summary of teachers’ responses about “learner-centered approach” (n = 32)**

<table>
<thead>
<tr>
<th>Categories</th>
<th>Teachers responses</th>
<th>Questionnaires (n = 28)</th>
<th>Interviews (n = 4)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>I am sure</td>
<td>I think so</td>
</tr>
<tr>
<td>Obvious meaning (n = 9)</td>
<td>Teacher involves learners in the learning.</td>
<td>7</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Teachers need to have learners as our priority</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>*Accommodate differences (n = 5)</td>
<td>Teacher to diagnose what learners know before teaching</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Teacher should allow learner interests and questions to direct teaching</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Teacher has to allow learners to study at their own pace, with diverse aids</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>*Allow learners choice (n = 4)</td>
<td>Teachers must let learners come up with their own ideas/strategies</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Teacher has to involve learners in the development of lesson plans</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Teacher has to use learners’ ideas to design guided activities</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Teacher should make use of the materials students brought</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>*Individualized learning (n = 2)</td>
<td>Teacher must pay attention to individual students (see each does work)</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Teacher has to let learners read on their own and identify main points</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Activity-orientated (n = 24)</td>
<td>Teacher designs an activity, and allows students to do work</td>
<td>9</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Teachers allow learners to do most of the work with teacher guidance</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Teachers allow learners to be actively involved (hands-on)</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Teacher should give learners a chance to discover on their own</td>
<td>10</td>
<td>4</td>
</tr>
<tr>
<td>Activity-based (n = 7)</td>
<td>Teachers allow learners to do activities that help them reach answers</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Start lessons with activities</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Other</td>
<td>Teacher makes lesson plans, and decides on material and activities</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Teacher creates some interest in the topic</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Teacher forms groups in which students discuss ideas</td>
<td>5</td>
<td>3</td>
</tr>
</tbody>
</table>

* Acceptable description

- Thirty-one of the answers focused on activities, suggesting that the majority of the teachers incorrectly seemed to believe that “learner-centered” refers to active involvement of learners in the learning (i.e. they see “learner-centredness” as “activity-orientated” or “activity-based”), a problem noted in eight of the ten South African biology teachers interviewed in one study (Sanders and Kasalu, 2004). As indicated in Table 9, only seven of the 31 answers (about a third) seemed to suggest that when activities are used, lessons should be activity-based, i.e. that learning starts with activities, and that

“students do activities that help them to reach answer.” (Teacher #10)
How teachers made their lessons learner-centred: Using a learner-centred approach is a requirement of the new syllabus. Because few teachers were able to give an acceptable definition of the term (according to the literature), another question was asked to get further information on teachers’ perceptions of the term. Teachers were asked to list three ways in which they thought they made their lessons “learner-centred”. The teachers’ responses indicated that:

- 4 of the 18 teachers who indicated that they used a learner-centred approach in their teaching correctly used some of the features of learner-centredness such as giving learners some choice. For example,

  “Involve them very much in the development of my lessons.” (Teacher #20)

  or accommodating learners’ prior knowledge,

  “Used questions to find where learners are, use their ideas to design guided activities.” (Teacher #23 and one other teacher had a similar answer)

  and allowing learners to work at their own pace, for instance

  “Make learners explore on their own (either using questions, sometimes even at their own pace).” (Teacher #23)

- 15 teachers incorrectly believed their lessons were learner-centred when they did practical work with students, or involved students in the learning process. For instance, teachers said

  “They carry out experiments on their own and I will be just there to guide them.” (Teacher #20)

  “Students perform experiments, observe and record, draw conclusions.” (Teacher #27)

The above quotes confirm the observation made in the previous sections that these teachers incorrectly equate learner-centred learning with learner involvement in the learning process.

Teachers’ understanding of “activity-based learning”

For teachers to successfully implement activity-based learning they must have a clear understanding of what “activity-based learning” means. Another workshop activity focused on the concept of “activity-based learning”, and one questionnaire was devoted to this concept. Answers from the previous questionnaires had already suggested that many teachers were unaware of the difference between “activity-orientated” and “activity-based” lessons. Activity-orientated lessons are less likely to allow learners to construct knowledge in a meaningful way which incorporates understanding. The responses from the workshop activities and interviews are summarized in Table 10 on the next page.

- Three teachers (Teachers #15, 20, 26) gave answers at the “obvious level” which only repeated the wording of the term (such as ‘activity-based’ means learning based on activities.” (Teacher #3) and all three were sure their answers were correct.

- Twenty-one of the 32 teachers emphasized the need for learners to do practical work or experiments, which does not really give an indication of whether they are doing something different from what they have been doing in the old syllabus (activity-orientated learning). For
instance, they do not explain the purpose of the activities, or whether the activities are done before or after concepts have been taught. For instance,

“Learning that involves students in action. They should be doing something not relying on theory. Learning with full of experiments.” (Teacher #13)

“Students actively participate or carry out suggested activities by the text.” (Teacher #25)

Table 10. Summary of teachers’ responses about “activity-based learning”

<table>
<thead>
<tr>
<th>Categories</th>
<th>Teachers’ responses</th>
<th>Questionnaires (n = 28)</th>
<th>Interv</th>
<th>How sure are you that your answer is correct?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>n =</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>I am sure</td>
<td>I think so</td>
<td>Not sure</td>
</tr>
<tr>
<td>Timing of activities was unspecified (not easy to tell if correct or not) (n = 21)</td>
<td>Emphasis on prepared practical investigations</td>
<td>6</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Investigations which are close-ended</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hands-on practical confirmatory activities</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Taking active participation, doing problems</td>
<td>6</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Activities are hands-on and mentally challenging</td>
<td>3</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Students observing, predicting, answering questions</td>
<td>4</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>*Activity done in order to learn (correct) (n = 18)</td>
<td>Students learn by performing activities guided by teacher</td>
<td>4</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Learning derived from activities engaging mind</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>New concepts learned from activities/discoveries</td>
<td>9</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Knowledge acquired as learners do activity</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

* Means acceptable description

NB: Numbers do not add up because some teachers gave more than one responses

- Eighteen of the teachers (above half of the group) gave a correct (according to the literature) explanation of the concept of “activity-based learning” as they indicated that learning is derived or based on activities

  “There will be a lot of activities learners perform whilst they learn from those activities.” (Teacher #2)

  “New concepts are learned from activities done … ” (Teacher #6)

  “Discoveries are during and after an activity has been done.” (Teacher #10)

  “Using activities mostly in learning process, involving learners in activities as to learn.” (Teacher #16)

  The last four quotes indicate a purposeful and meaningful construction of knowledge from activities which is an important characteristic of activity-based learning.

How teachers made their lessons activity-based: Because a large number (over half) of teachers had only indicated that they involve learners actively in the learning process without indicating the purpose of the activities, it was important to look at the activities they said they did. This would allow the researcher to decide whether activities were “activity-based” or not. So teachers were asked to suggest three ways in which they thought they made some of their lessons activity-based. The responses most teachers gave could not allow me to judge whether the activities were activity-based or just activity-orientated learning, as sequencing of activities was not specified. For instance,

- Twenty-three teachers indicated that they allow learners to perform activities.
“Students carry out the suggested activities in the text.” (Teacher #25)
“Planning activities for the students.” (Teacher #11)
“They are assigned to carry out experiments and record.” (Teacher #15)

- Only three teachers gave answers that suggested that learning happened as a result of activities. For instance,
  “Students do research about a particular concept themselves.” (Teacher #23)
  “Making students to make research and make presentations.” (Teacher #13)

Learner-centered used synonymously with activity-based: Many of the previous answers suggest that teachers might not be aware that “learner-centred” and “activity-based” are two very different concepts, so they were specifically asked whether they think “learner-centred approach” is the same as “activity-based approach”.

- Thirteen teachers (almost a half of the group) thought “learner-centered” is the same as “activity-based” citing reasons like
  “both require students involvement.” (Teacher #1)
  “in both students must have to do something themselves to understand.” (Teacher #8)
  “Exploring, findings information by themselves, learners are focal point.” (Teacher #4)

- Ten teachers (about a third of the group), however, indicated that the concepts are not the same and they correctly differentiated between the two. For example,
  “learner-centered implies that the learner directs the learning process, their interests and pace control activities, some activities can be teacher-centered instead of learner-centred.” (Teacher #2)
  “activity-based learner is made to learn while acting or being involved in activity, while learner-centered should address learner needs.” (Teacher #7)

One teacher explained that
  “learner-centered, not only do students do work, they learn at their own pace, teacher as facilitator design tasks that accommodates them in terms of their capabilities.” (Teacher #15)

- One of the interviewed teachers, although she correctly indicated that the two concepts are different, did not correctly differentiate between them.
  “They are different, in that ... at times they don’t have to get into the activities to get to the core of the topic. The well prepared worksheet can guide them to get what you are trying to find out from them. That is learner-centred.”
  (Interviewed Teacher #2, lines 335-37)

What becomes obvious from these two groups of teachers is that those who give a vague superficial meaning of “learner-centered” and “activity-based” do not seem to see the difference between the two. On the other hand, those teachers who seem to understand what each approach means are also able to differentiate between the two.
4.2.2 Teachers’ use of new approaches in teaching “breathing and respiration”

Research Question 5a: In terms of the current teaching of Form B and C, to what extent do Junior Secondary Science teachers think they are currently using the new approaches when they teach the topic of breathing and respiration?

The last question in the activity-based questionnaires and the interviews involved teachers thinking about their practice when teaching a particular section of work i.e. breathing and respiration, and listing the activities they did. Teachers were also asked if they thought they used the new approaches (“activity-based learning” and “learner-centred approach”) when teaching the topic. This question allowed the researcher to decide on the extent to which teachers were implementing the requirements of the new curriculum (mentioned in the syllabus document).

- All the 25 teachers who completed this questionnaire and three of the four teachers interviewed indicated that their learners did activities when teachers were teaching breathing and respiration. All teachers who filled in the questionnaire, except Teacher #3, also said they used an activity-based approach in their lessons. Some of the activities they did are:

  “Breathing in and out and investigating the size of the ribcage and movement of ribs.” 
  (Teacher #1 and nine other teachers with similar answers)

  “Used apparatus to demonstrate what happen during breathing and respiration.”
  (Teacher #18 and five other teachers gave similar answers)

  “Investigation of composition of inhaled and exhaled air.”
  (Teacher #2, with Teacher #23 giving a similar answer)

  “experiments to investigate anaerobic respiration using yeast”
  (Teacher #2, as well as #11, and #23 having similar answers);

  “breathing rate and depth in relation to physical activity was investigated.”
  (Teacher #4)

These activities could be activity-based but the fact that teachers did not explicitly explain how the activities were used, and the sequencing of activities in relation to learning, made it difficult to tell if they were truly activity-based. For example, many teachers indicated that they used the lung model but they did not emphasise the value of the model in helping learners to understand the role of pressure and volume relationships and how they change during the breathing process. A summary of activities is given in Table 11 on the next page.

- Although seventeen teachers (over half of the group) indicated that they used a learner-centred approach, the activities they listed do not reflect any of the features of a learner-centred approach being put into practice. This is in line with what Hall and Hord (2006) indicated, that when teachers lack the knowledge on “how to” they will implement what they think the curriculum wants which may be close to or far from what the curriculum wanted.
Table 11. A summary of teachers’ replies about activities they did for the section on teaching breathing and respiration (n = 25)

<table>
<thead>
<tr>
<th>Activities considered to be activity-based</th>
<th>Breathing in and out investigating the size of the ribcage (observing/state/discussing what is happening)</th>
<th>Frequency</th>
<th>Activities considered to be activity-orientated</th>
<th>Used lung model to demonstrate what happens during breathing/make lung model</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Take vigorous exercise and observe what was happening/ran around tennis court noted down breathing rates</td>
<td>(n = 4)</td>
<td>Experiments to investigate anaerobic respiration using yeast</td>
<td>(n = 4)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Derived equations</td>
<td>(n = 1)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Identify parts involved in breathing must observe and give results</td>
<td>(n = 1)</td>
<td>Investigation of composition of inhaled and exhaled air</td>
<td>(n = 3)</td>
<td></td>
</tr>
</tbody>
</table>

- Twelve teachers indicated that they taught attitudes when they were teaching the topics of breathing and respiration. However, no judgments can be made about this part as the question was not probed further.

- Teachers were then asked if their students used skills when teachers taught section on breathing and respiration, and twenty of them said they did, while four did not. Thirteen teachers indicated that they taught skills and listed the skills they have taught. The list included
  
  “Deep breathing” (Teacher #8)
  “To follow a procedure in any activity they have to do” (Teacher #9)
  “Observation, identification, labeling” (Teacher #7)

  Three of the teachers, however, listed activities not skills, while five on the list could not be considered appropriate examples of skills. For instance

  “Deep breathing.” (Teacher #8)
  “reasons for behaviour of indicators.” (Teacher #23)

  Some of the teachers who indicated that they did not teach skills said the reason for not teaching them was that

  “there were no activities to do.” (Teacher #19)
  “did not even think of them. Main focus was on content.” (Teacher #2)

  The results indicate uncertainties teachers may have about the teaching of skills and attitudes which could impact on how they put these approaches into practice.

Research Question 5b: In terms of the current teaching of Form B and C, how well do teachers believe they are coping with the approaches and why?

The four interviewed teachers were asked if they thought they were coping with the demands of the new syllabus, and the following section discusses their responses.

- Three of the four teachers gave responses that suggest they are coping, although they indicated
that they experience problems such as large classes which they believe makes using a learner-centred approach difficult. These teachers give differing reasons regarding how they think they are coping. For instance, Teacher #1 indicated that

“Eh ... content-wise I am comfortable with this. But there is this thing that I have stated earlier that ... it is just too big ... It is too big and it is ... eh ... I had Form C when I got here in 2004 ... last year ... no, when I got here in 2005. (In) 2006 I also had Form C. But to tell you the truth I have never finished that syllabus with any year group.”

(Interviewed Teacher #1, lines 209)

The implication of the quote is that there is too much content to cover in each year which makes it impossible to complete all the work expected. Teacher #4 shared the same view

“... As much as we are aware of that, but we just teach the syllabus. Because all you are doing is ... they are going to be asked here and there ... we are focussing on the examinations ...”

(Interviewed Teacher #4, lines 615-616)

This is in line with what Lewin (1995) indicated that mismatch between demands of the new curriculum and mode of assessment makes it difficult to implement the necessary changes.

One teacher indicated that

“Actually, we are coping with the new syllabus, because it involves pupils more, and once they are involved more they are ... happen to remember even much better and this is going to be displayed in the ... when they write reports. Basically we ... at the end ... we use the reports ...”

(Interviewed Teacher #3, lines 520-522)

“I think I like the new syllabus. I like it because ... it makes the work easier for the teachers. If you plan accordingly, and do your things, and kids do their things and you will see where they have problems. You are not just telling them ... like that ... So I think I like it.”

(Interviewed Teacher #4, lines 645-649)

One other teacher indicated that she is not coping

“I don’t think ... eh ... that it is because we are not aware. We are ... we are aware that we have to teach them. One, may be the time factor. Two, kea kholo (I think) not being comfortable ... not comfortable to teach the skills could be one of them.”

(Interviewed Teacher #2, lines 377-378)

I also realized that she had said that she had never been to any workshop so this could account for her not being able to cope. This teacher suggested that they needed to be given some training.

Research Question 5c: In terms of the current teaching of Form B and C, what help do teachers say they need?

The four interviewed teachers were asked what kind of help they thought they would need to help them cope better with the new approaches. The response of Teacher #1 indicated that they need to know what is being taught in primary schools

“Yes. So what I could say is that ... eh ... if the ... I don’t know the syllabus of ... of ... of primaries, but if somehow these things could be made to be linked so that when we take off here we ... we ... these kids have already acquired some of these things from primary.”

(Interviewed Teacher #1, lines 224-226)
Teacher #2 felt they needed to be given in-service training on how the curriculum works

“Kea kholoa (I think) we need to be given workshops ... more workshops of how the spiral in the new syllabus is going to help us a lot in the class, so that we can impart knowledge. So we lack that ... how do we do it.” (Interviewed Teacher #2, lines 344-345)

Teacher #3 believes the curriculum should be revised regularly so that the inputs teachers make as they work with the new curriculum could be incorporated.

“I should think that it should be revised regularly. It shouldn’t take more than five years to revise this, because there are certain changes which do occur during the process. There should be an annual review of this ... so that we report when I was doing this activity this one was a little bit low ... that is the standard ... was a little bit low for some people ... so they can try to change those. Or even if the book is not going to change, but we give each other some of the things that we do, as a way of piling or increasing the content in the textbooks.” (Interviewed Teacher #3, lines 532-536)

The last teacher, Teacher #4, would like it if the mode of assessment would match the demands of the new curriculum because the teacher feels the examinations influence teaching.

“... If I were to meet them I don’t know if I will say the curriculum developers as such, but what I have in mind may be basing myself with the problem that I have. I would say the external examinations should not be based only on the examiner’s point of view. It should also be based on the attitude change and the skills that the kid has after he has gone through the learning. But it is not the case. As much as they say we should change the attitudes ... develop skills ... but when they are being examined I don’t see that. So hence why we have forgotten about developing them.” (Interviewed Teacher #4, lines 655-660)

The above quotes give different needs from teachers which suggest that teachers do seem to experience some problems relating to use of the approaches. This implies that something needs to be done to help teachers cope better with the demands of the new syllabus.

### 4.3 CONCLUDING REMARKS

Using two different data-gathering strategies for the research (questionnaires and interviews) allowed for triangulation of the results. The data showed that fewer than half the teachers had a complete understanding of the learner-centred approach, just above half of the teachers understand “activity-based learning”, and almost a third had misconceptions about what was required. Although about a third of the group mentioned the teaching of skills, only one teacher was aware of the need to teach attitudes. These findings provide a picture which suggests that teachers’ lack of understanding of what they are required to do may be an obstacle inhibiting implementation of the new approach to the teaching of Junior Secondary Science in Lesotho.