

Matching/Mismatching of Teaching and Learning Styles in Rural Learning Ecologies of Lesotho: Does it Enhance Academic Achievement

M. J. Letele, G. Alexander* and Z. I. Swanepoel

Department Psychology of Education, University of the Free State, South Africa
**E-mail: alexander@ufs.ac.za*

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ABSTRACT The Lesotho Junior Certificate results between 2003 and 2006 indicate that in the rural secondary schools of Lesotho the pass rate ranged from 51% to 58%. These figures are low compared to those in the urban schools for the same years which ranged from 70% to 72%. In addition, the Teaching Service Department shows that there was 40% of unqualified teachers in these rural schools in 2003 and 35% in 2007. There seems to be a correlation between the high numbers of unqualified teachers and low academic achievement of learners in these schools. This study was undertaken to determine the extent to which matching teaching and learning styles enhances academic achievement of learners in the rural secondary school ecologies of Lesotho, with the view to improve academic achievement of such schools. The Solomon Felder Index of Learning Styles (SFILS) and self-designed teaching style questionnaire were used using 190 learners and 95 teachers from rural secondary schools, respectively. The empirical findings indicate that mismatches of teaching and learning styles largely inhibit academic achievement of learners while matching them largely enhances this achievement. The findings of this research indicated that mismatches do exist in the teaching styles of teachers and their learners' learning styles and that matching teaching and learning styles enhances academic achievement of learners in rural learning ecologies. In this regard, it is recommended that: Teachers should match their teaching styles with the learning styles of their learners in most lessons to enhance their learners' academic achievement.

INTRODUCTION

Throughout the world, governments and other education stakeholders advocate quality education and education for all. Lesotho is no exception to this advocacy, which is evidenced as one of the educational objectives in the Lesotho Ministry of Education and Training (LMOET) (LMOET 2005). Among educational issues that have received the significant attention is knowledge about teaching and learning styles' theories (Opdenakker and Van Damme 2006; Morrison et al. 2006). Numerous research endeavors attempt to explain and address the learning styles of learners, and consider a learning style as the consistent pattern of behaviour and performance by which an individual approaches a learning experience (Ford and Chen 2001; Graf et al. 2007). While, the recognition of students' learning styles is regarded by many educators as a vital part of an effective teaching strategy (Morrison et al. 2003), some research attempts on learning styles have focused on enhancing learners' academic achievement (Kolb and Kolb 1999; Ford and Chen 2001; Dasari 2006). From these attempts, it has generally been

found that when learners' learning styles are matched by the design of the curriculum, with the learning styles of their teachers, or with appropriate teaching styles, academic achievement improves (Dunn and Dunn 1979; Felder 1993; Ford and Chen 2001). With the notion that over the past two decades, educationists have expressed increasing concern about the number of learners who fail in the secondary and high schools of African countries (Motsau 1990; Calitz 2001), it is worthwhile to determine the influence of matching/mismatching teaching and learning styles on learners' academic achievement in Lesotho. This country is characterized by comparatively low academic achievement in secondary schools, especially in the rural areas (LMOET 2005, 2008) which in itself impacts severely on their respective learning ecologies. Within the ambit of this study, a rural learning ecology refers to a set of contexts set in challenging physical spaces such as various population densities, small and scattered, ranging from bare lands, foothills to mountain areas with deep valleys and rivers- in this context opportunities for learning are provided (Barron 2006; UNAIDS 2002). These learning ecologies are representa-

tive and inclusive of learners, teachers, schools confined within the ten educational districts of Lesotho. Rural learning ecologies, therefore provides an understanding of how the influences of home, class, school, family, community and educational district interact and affect each whilst also influencing learners' academic achievement (Donald et al. 2002).

Some measures, such as provision of resources and workshops, are being provided by LMO-ET to secondary schools in these underlying learning ecologies, however the importance of learning styles orientated teaching has not yet received significant attention. Paying attention to learners' learning styles in Lesotho can be a good step to localize the national curriculum which has since been used while Lesotho was colonized by Britain. This study aims to inform teachers and decision makers in Lesotho about how academic achievement can be enhanced by paying attention to learners' learning styles and teachers' teaching styles.

Before directing matches or mismatches of teaching and learning styles to learners, Moallem (2007) and Isemonger and Sheppard (2003) state that knowing a learner's learning style is a first step to a personalized approach to him or her, and also a starting point in helping the learner to improve on the weak styles and making use of his/her strong styles. Equally important, teachers should guard against the development of teaching styles which are congruent with their own learning styles, rather than those of their learners (Barbe and Milone 1980; Friedman and Alley 1984; Felder 1993; Wheeler and McLeod 2002). Can a teacher's teaching style then be modified? Heimlich and Norland (2002) believe that there is an important pre-condition before teachers can attempt to modify their style. That is, their beliefs and values regarding their roles and their learners' roles in learning should first be changed. This point implies that teachers in Lesotho rural learning ecologies can modify their teaching styles in an attempt to be more flexible and accommodative to their learners' preferences, to become effective teachers. In other words, knowing various teaching styles and an ability to move deliberately from style to style as the objectives change from one teaching episode to another is important for effective teaching (Mosston and Ashworth 1990; Winnick 1990; Grosser 2007). The rationale for knowing learners' learning styles and guarding against the

development and extended use of inappropriate teaching styles is that teachers should make informed decisions and be able to expose learners to deliberate matches or mismatches of styles. According to Diaz and Cartnal (1999), the limited teachers' knowledge about learning styles that exist in their classes and schools lead to teachers who use a wide variety of teaching activities, hoping that they will cover most of their learners' learning style preferences along the way. This may be the case in the rural learning ecologies of Lesotho, which are until recently characterized by many teachers with low or inadequate qualifications (Mulkeen 2005; LMO-ET 2008).

Teaching/Learning Styles and Academic Achievement in Rural Learning Ecologies

According to Calitz (2001), academic achievement can be viewed as the degree to which learners are able to attain a standardized academic goal or, in other words, the degree to which learners master those tasks which they are expected to master for the respective academic year. There are a number of factors within the learner and within the learning context that affect the academic achievement of individual learners. Researchers relate academic achievement to psychological, physiological, socio-economic and educational system factors (Motsau 1990); internal and external factors (Brimer and Pauli 1971); cognitive, biographical, affective and social factors (Calitz 2001); and school-related, learner-related and parent-related factors (Lecroy and Krysik 2008). The issue of addressing learning styles can be located in the educational system and school-related factors of academic achievement.

Learning style is therefore the composite of characteristic cognitive, affective and physiological behaviours that serve as relatively stable indicators of how learners perceive, interact with and respond to the learning environment (Ellis 2001). On the other hand, teaching styles refer to the behaviours that teachers exhibit in their interactions with their learners (Heimlich and Norland 2002; Dasari 2006) or to the way various teaching approaches are combined to produce an optimal outcome in learning (Hoyt and Lee 2002).

The relationship between teaching/learning styles and academic achievement should entail

the following main characteristics, which can be implemented and contextualized by teachers in rural secondary schools of Lesotho to improve their educational settings: Firstly, teaching styles should increase self-awareness and meta-cognition of learners about their strengths and challenges. Research on learning styles and academic achievement has shown that teaching learners how to learn, monitor and manage their own learning styles is crucial to their academic achievement (Dasari 2006). Secondly, teaching styles should balance learning tasks and activities so that they would accommodate all learners by taking into account all dimensions of learning styles (Barbe and Milone 1980; McKeache 1996; Dasari 2006). Thirdly, while learners should be able to choose to learn in a manner they prefer, they should also be challenged to learn in a less preferred manner which provides practice and feedback in ways which they may not initially be comfortable with. On this note, the benefits of matching/mismatching teaching and learning styles need to be unfolded.

Matching/Mismatching Revisited in Rural Learning Ecologies

Recognition of students' learning styles is regarded by many educators as a vital part of an effective teaching strategy (Morrison et al. 2003). Again, the selection of appropriate teaching styles is in another way crucial to improving the effectiveness of teaching and instructional experiences (Winnick 1990). Even though knowing learners' learning styles may be that important, there are debates among researchers as to whether matching or mismatching teaching and learning styles improves academic achievement.

In favor of matching teaching and learning styles, there is empirical support for the rather obvious position that learning in a manner that is consistent with one's learning style produces better academic results than otherwise (Domino 1979; Dunn and Dunn 1979; Isemonger and Sheppard 2003; Dunn 2003; Morrison et al. 2006). To be more precise, Charkins et al. (1985), Felder (1993), Jones (1998), Morrison et al. (2003), Dasari (2006) and Moallem (2007) suggest that learners whose learning styles match with the given teaching style tend to retain information longer, apply it more effectively, retain more positive attitudes toward the subject, and become greater academic achievers than those who experience mismatches.

Additionally, a mismatch condition leads to a grossly inferior performance; learners learn less and express less satisfaction with the effectiveness of the teacher (Jones 1998; Ford and Chen 2001; Isemonger and Sheppard 2003; Dasari 2006). Graf et al. (2007) point out that, learners with a strong preference for a certain learning style may have difficulties if the teaching style does not match their preferred learning styles. A mismatch between teaching style and learning style therefore seems to have detrimental effects on attainment, and could either impede or even impair the learning process. In relation to rural secondary schools of Lesotho, it might be the case that some learners experience mismatches between their learning styles and teachers' teaching styles. Thus it becomes very important to undertake more empirical investigations in this regard. However, as there are many research findings to support the benefits of matching teaching styles to learning styles, there are also those studies that are opposed to matching as a good solution to poor academic achievement. Some researchers assert that there is a lack of evidence to support the view that matching teaching and learning styles is educationally significant. Doyle and Rutherford (2003) and Ellis (2001) state some criticisms based on matching teaching and learning styles. These are:

- ♦ The experimental designs employed in classroom based learning styles research appear to be weak and do not have adequate controls.
- ♦ There could be some element of bias on the part of the researchers as each one stands to gain financially from propagating their own theory and accompanying instrument that measures learning styles.
- ♦ Some researches base their findings on unpublished studies, journals and doctoral studies.
- ♦ There have been no published accounts of any large scale program evaluation conducted to determine whether an in-service program on learning styles has contributed much to learners' academic achievement.

Again, other theorists are uncertain about whether it is of great importance to teach to an individual's strengths or to try to help learners overcome their apparent challenges. These theorists argue that learners need to be helped to overcome challenges in their cognitive styles and to develop a more integrated approach to

learning by mismatching teaching with their learning styles (Kolb 1984); and to develop the compensation techniques needed for situations in which style conflicts exist (Jones 1998).

Another argument forwarded against matching is that it is hard to imagine teachers changing their teaching style to accommodate many different learning styles in one classroom. Doyle and Rutherford (2003), contend that teachers will be faced with formidable problems because of the diversity of work teaching to learning styles entails. This sentiment is supported by Friedman and Alley (1984), and Jones (1998) who indicate that when using a variety of teaching styles, teachers do not have time to juggle classes of 30 or more learners while giving attention to many style preference factors for each individual learner. It even becomes more difficult to address individual learning styles while having a teacher-learner ratio of one to sixty, as is the case in rural secondary schools of Lesotho (LMOET 2008).

However, some attempts can be made to address these styles at odd situations to promote the effectiveness of teaching and learning. Felder (1993), Diaz and Cartnal (1999), Cilliers and Sternberg (2001), and Morrison et al. (2003) suggest that learners should be exposed to a wide variety of alternative teaching styles in an attempt to find teaching styles that fit each individual learner's learning style. In this case, no learner would necessarily benefit from all the teaching styles used, but all learners would benefit from many of the teaching styles used to optimize learning in the classroom. In the same way, this study suggests that teachers could use teaching styles that cuts across all the learning styles that they have identified in their classes, while at certain times, mismatches can be created deliberately to address challenges.

The significance of the relationship between the teaching styles and learning styles merits more attention, because of the shift of emphasis from teacher-centred to learner-centred learning (Mokoena 1997; Jacobs et al. 2004). Teachers in rural secondary schools of Lesotho can use this literature to find ways suitable to the context in which they can best address their learners learning styles. As far back as ancient Greece, it was noted that learners have different styles of learning, and these styles can be linked to certain teaching styles to enhance academic achievement (Wratcher et al. 1997; Diaz and Cartnal

1999). Therefore the objective of this study was to find the extent to which matching/mismatching teaching and learning styles improve learners' academic achievement in rural secondary schools of Lesotho. The findings of this study therefore are aimed at helping teachers in Lesotho and other countries with the same situation, to improve their learners' academic achievement.

Conceptual Framework

This study was entirely based on a constructivist orientation to learning. Constructivism as a paradigm posits that learning is an active and constructive process in which the learner actively constructs or builds new ideas or concepts based upon current and past knowledge (Learning Theories 2008). The authors contend from the constructivist perspective that the primary responsibility of the teacher is to create and maintain a collaborative problem-solving environment in rural learning ecologies, where learners are allowed to construct their own knowledge and teachers serve as facilitators. To ensure active participation and construction of knowledge for all learners, addressing learners' individual learning styles seems to be very important. In supporting the latter, Felder-Silverman Learning Style Theory has been chosen because it describes the learning styles of learners in more detail, elaborating and distinguishing between preferences in these learning styles (Graf et al. 2007). This theory consists of a model that combines several dimensions presented in the Myers-Briggs model (sensing/intuitive) with Kolb's information processing dimension (Active/Reflective). The core idea of the Felder and Silverman model is that teachers should teach learners according to their preferences while on the other hand should strive for a balance of instructional methods (Moallem 2007). According to Dasari (2006), Felder and Silverman classify learners' learning styles according to five questions which bring about the learning style dimensions for rural learning ecologies. These questions are:

- 1) What type of information does a learner preferentially perceive?
- 2) Through which sensory channel is external information most effectively perceived?
- 3) With which organization of information is a learner most comfortable?

- 4) How does the learner prefer to process information?
- 5) How does the learner progress towards understanding?

In answer to these questions, the learners are classified as sensing or intuitive, visual or verbal, inductive or deductive, active or reflective and sequential or global. The first dimension distinguishes sensing and intuitive. The second dimension covers visual and verbal learners. The third dimension covers inductive and deductive learners. In the fourth, active and reflective learners are considered. In the fifth dimension, learners are characterized according to their understanding. Sequential learners learn in small incremental steps and follow some logical stepwise paths in finding solutions. In contrast, global learners use a holistic thinking process and learn in large heaps.

Felder-Silverman (1988), and later Felder and Solomon (2008), developed the Index of Learning Style (ILS). The ILS is a 44 question, self-scoring instrument, which assesses preferences on the four dimensions of learning styles. To integrate the learning style model into the design and development of instruction, the Felder-Solomon's Index of Learning Style was used to identify specifications for matching teaching and learning styles to promote academic achievement in rural secondary schools of Lesotho.

According to Felder and Silverman (1988) just as there are five questions that can help determine a learner's learning style in rural learning ecologies. Teaching styles may also be defined in terms of the answers to five essential questions. These questions are:

- ♦ What type of information is emphasized by the instructor?
- What mode of presentation is stressed?
- ♦ How is the presentation organized?
- What mode of learner participation is facilitated by the presentation?
- ♦ What type of perspective is provided on the information presented?

From the above questions, Felder and Silverman came up with five dimensions of teaching styles, and these are the Concrete or abstract, Inductive or deductive, Active or passive, Sequential or global teaching styles. Felder and Silverman later omitted the inductive/deductive dimension from their Learning Style Model, thus affecting the teaching style dimensions as well. In this study, this idea lead to the existence

of only four learning style dimensions and four corresponding teaching styles, which were used to identify the existing teaching and learning styles in rural secondary schools of Lesotho.

METHODOLOGY

Quantitative Research

In order to achieve the objectives earlier, the empirical investigation that was used is quantitative in nature. Quantitative research is a numerical method describing observations of materials or characteristics (Burns 2000). For the proposed research, a questionnaire method was used to gather data that is relevant to the research questions. In this case, the Felder-Solomon Index of Learning Styles (FSILS), which consists of 44 questions designed to identify learning styles of learners, was used. A self-designed questionnaire based on Felder and Silverman's theory of teaching styles was also used to identify teachers' teaching styles in rural learning ecologies of Lesotho. Each teacher's dominant style was then linked to each learner's predominant learning style to see if they match or mismatch. To determine the influence of matching teaching and learning styles on academic achievement, end-of-year examination marks of learners were considered. For each learner, the choice of examination marks used was entirely based on the subjects taught by the teachers that participated in the research. These results were obtained from the national newspaper, schools and some from the Examinations Council of Lesotho. In order to determine the academic achievement of learners, prevalent in the rural school ecologies of Lesotho, end-of year results were classified into levels of achievement. The classification was ideal for this study as it delineates many levels of achievement, which provide a good overview of learners' academic achievement in rural secondary schools of Lesotho. This empirical investigation unfolded with a pilot study which covered two secondary schools in rural areas of Lesotho. In each school, 5 teachers and 5 learners completed questionnaires that were directed at teaching styles and learning styles respectively.

Reliability of Findings

Reliability of findings is very important for this research, therefore the various measurement

instruments that were used by other researchers in attempting to categorize how learners learn were consulted for review. In this research, the Felder-Solomon ILS questionnaire seems to be reliable in measuring learning styles, because it is relatively short and conveys more dimensions of learning styles that are well defined. This instrument is often used and has been well investigated in measuring learning styles (Graf et al. 2007). Felder and Spurlin (2005) conducted studies that deal with analyzing the response data of ILS regarding the distribution of preferences for each dimension as well as with verifying the reliability of the instrument. Among the studies conducted, one tested the test-retest reliability of the ILS. When testing this aspect, the interval between test administrations was large enough so that respondents could not remember their responses from one test to the next. The results concluded that the test-retest reliability of the Felder-Solomon ILS is satisfactory, even after an interval of 8 months and a sample size of only 24 respondents (Felder and Spurlin 2005). Similarly, the self-designed teaching style questionnaire was designed according to the existing theory of Felder and Silverman on teaching styles. The construction of questions in this questionnaire was based on how Felder and Silverman describe the teaching styles and also based on the type of questions in the learning style instrument. Since the questionnaire was also tested in a pilot study, it may be considered reliable.

Validity of Instrument

With regards to measuring learners' learning styles, the Felder-Solomon ILS questionnaire seems to be valid. In studies by Felder and Spurlin (2005), the instrument was tested in terms of the extent to which it actually measures what it claims to test. These studies confirmed the validity of this instrument, in that the instrument scores correlated with quantities with which they were to correlate. In the same way, the researcher believes that the teaching style questionnaire is valid because it was designed from an existing theory which corresponds to the model on which the development of the Felder-Solomon ILS was based. In fact, both the self-designed teaching style questionnaire and the learning style instrument were administered in a pilot study in an attempt to determine their applicability and validity in this study.

Research Sample Composition

The research involves sampling which is part of the internal logic of the study. Stratified sampling design was used for this research. The sample included the districts, schools, teachers and learners. Two secondary schools per district were randomly selected from the rural areas (Foothills and Senqu valley) of the 10 districts of Lesotho. A sample of 300 participants was selected randomly. Thus, there were a total of 30 participants per district. These participants were divided into 2 subgroups; learners and teachers, who made a total of 200 and 100, respectively. The selection of the participants was done such that there were 10 learners in Form C class (equivalent to grade 10) and 5 of their teachers, in each school. However, due to the shortcomings of using the questionnaire method, only 285 questionnaires were completed and received by the researcher. Therefore, the total of 285 respondents formed the population of this study. This total number consisted of 190 learners and 95 teachers who completed and returned the questionnaires. This implies that a total of 285 questionnaires was completed and collected from respondents, giving 95% response rate. In this case, a high degree of validity was ensured.

Data Analysis

In this study, the program on statistical packages for the social sciences (SPSS) was used to analyze data (undertaken by the Department of Statistics at the University of the Free State, South Africa). To address the main research objective, the analysis was done in a way that each teacher's teaching style(s) was matched with each of his/her learner's learning style(s) such that for each school, the total frequencies of both matches and mismatches were 50 (5 teachers by 10 learners), thus giving a total of 950 matching and mismatching cases. The statistical representation of this data is in the forms of distributions, frequencies and correlations. In this case, data presentation includes tables, pie-charts and histograms.

RESULTS AND DISCUSSION

This study compared the influences of matching and mismatching teaching and learning styles on academic achievement of learners. In

all 19 schools that participated in the empirical investigation, the dominant teaching and learning styles of all teacher and learner participants respectively. Then, each teacher's dominant teaching styles were linked to all the learners' dominant learning styles in his/her class, to determine the frequencies of matches and mismatches. For each school, with 5 teacher and 10 learner participants, there was a total frequency of 50 matching and mismatching cases.

Table 1 provides data for the total frequencies of matching and mismatching cases in all the schools that were involved in the rural ecologies of this study. In most of these schools, the frequency of styles that match is relatively lower than the frequency of mismatches. This observation accounts for the fact that there is a huge difference of total frequencies determined for all these schools. Figure 1 further illustrates that for all rural secondary schools of Lesotho, there were 74.6% and 25.4% mismatching and matching cases of teaching and learning styles, respectively. These figures imply that the majority of the teachers in these schools did not match their teaching styles with the learning styles of their learners. Moreover, it seems that many learners did not experience learning environments that are conducive for their individual needs. This

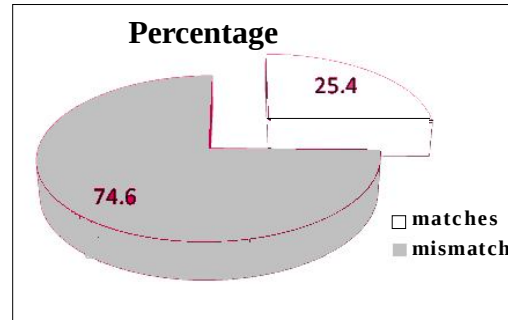


Fig. 1. Summary of all matching and mismatching teaching and learning styles

mismatch condition leads to a grossly inferior performance; learners learn less and express less satisfaction with the effectiveness of the teacher (Jones 1998; Ford and Chen 2001; Isemonger and Sheppard 2003; Dasari 2006).

In order to determine the influence of matches/mismatches on academic achievement, learners' examination scores were used. These scores were classified into levels of achievement in which each learner's scores were located. The scores were then linked with the style match or mismatch that was experienced by the learners such that for scores in each level of achievement, the frequency of matching and mismatching cases was determined. Table 2 indicates the

Table 1: Total matches/mismatches of teaching and learning styles that existed in the research population

School	Number of teachers	Number of learners	Frequency of style match	Frequency of style mismatch
1	5	10	15	35
2	5	10	8	42
3	5	10	16	34
4	5	10	8	42
5	5	10	26	24
6	5	10	14	36
7	5	10	18	32
8	5	10	9	41
9	5	10	9	41
10	5	10	22	28
11	5	10	14	36
12	5	10	10	40
13	5	10	16	34
14	5	10	8	42
15	5	10	3	47
16	5	10	9	41
17	5	10	13	32
18	5	10	15	35
19	5	10	8	42
Total	95	190	241	709

Table 2: The relationship between matches/mismatches and examination scores

School	Match		Mismatch	
	Mean	Standard deviation	Mean	Standard deviation
1	67.83	12.19	44.21	14.85
2	66.38	13.61	54.00	13.61
3	58.25	15.00	50.09	13.00
4	38.25	15.98	33.36	27.07
5	57.00	17.85	47.00	13.91
6	60.93	12.16	43.67	15.92
7	55.89	14.33	51.38	13.06
8	55.93	13.45	40.55	15.30
9	64.50	17.85	44.60	16.75
10	54.27	22.23	30.57	14.74
11	60.57	14.17	41.17	15.68
12	54.50	6.67	44.00	10.37
13	56.88	19.83	43.62	12.39
14	68.88	10.50	40.45	16.97
15	77.83	20.20	44.50	16.68
16	57.28	22.52	37.18	15.66
17	50.65	20.63	47.74	16.17
18	51.50	19.80	47.79	16.04
19	65.75	9.91	44.74	16.75
Total	57.78	17.57	44.12	15.74

Table 3: Total matches/mismatches and academic achievement in all 19 schools

<i>Levels of achievement</i>	<i>Matches</i>		<i>Mismatches</i>	
	<i>f</i>	<i>%</i>	<i>F</i>	<i>%</i>
Level 1 (0-29%) - Not achieved	14	5.8	96	13.5
Level 2 (30-39%) - Elementary achievement	14	5.8	139	19.6
Level 3 (40-49%) - Moderate achievement	43	17.8	217	30.6
Level 4 (50-59%) - Adequate achievement	49	20.3	143	20.2
Level 5 (60-69%) - Substantial achievement	63	26.2	88	12.4
Level 6 (70-79%) - Meritorious achievement	40	16.6	24	3.4
Level 7 (80-100%) - Outstanding achievement	18	7.5	2	0.3
Total	241	100.0	709	100.0

means and standard deviations of the examination scores against matches and mismatches for each school, while Table 3 clearly delineates the total frequencies of matches/mismatches across all levels of achievement in all rural schools.

In almost all the 19 schools, the average examination score for learners who experienced a match in their learning styles and teachers' teaching styles was above 50%, which is the margin of pass with credit in Lesotho. On the contrary, the mismatches seemed to result in average score of less than 50%.

In Table 3, it is indicated that level 1 of achievement (not achieved) in the rural secondary schools of Lesotho was represented by 5.8% matching cases and 13.5% mismatching cases of teaching and learning styles. These figures indicated a huge number of mismatches that inhibited the academic achievement of learners. On level 2 of achievement (elementary achievement), there were 5.8% matching cases and 19.6% mismatching cases in teaching and learning styles. These findings showed that many learners in the elementary achievement level experienced many mismatches in their teachers' teaching styles and their own learning styles, and thus performed poorly.

On level 3 of achievement (moderate achievement), there were 17.8% matching cases and 30.6% mismatching cases of teaching and learning styles. This level of achievement was represented by many matching and mismatching cases in relation to teaching and learning styles. There were, however, more mismatches than matches, which implied that many learners experienced conflicts in the way they learned and the way they were taught. This situation could be the cause of low academic achievement.

On level 4 of achievement (adequate achievement), there were 20.3% of matching cases and 20.2% of mismatching cases in teaching and learning styles. Again, on level 5 (substantial achievement), there were 26.2% of matching cases and 12.4% of mismatching cases with regard to matching teaching and learning styles. Moreover, on level 6 of achievement (meritorious achievement), there were 16.6% of matching cases and 3.4% of mismatching cases while level 7 (outstanding achievement) was represented by 7.5% of matching cases and 0.3% of mismatching cases.

From level 4 to level 7 of achievement, which could be considered to be above the margin of success, there were 70.6% of matching cases and 36.3% of mismatching cases. From these figures, there were 34.3% more matching cases in the higher levels of achievement (in the range of 50 to 100%). On the other hand, from levels 1 up to 3 of achievement (below 50%), there were 29.4% matching cases and 63.7% mismatching cases. In these levels of achievement, there were 34.3% more mismatching cases than the matching cases. This trend of differences indicated that matching teaching and learning styles enhanced learners' academic achievement to a large extent while the mismatches largely inhibit academic achievement. In fact, Charkins et al. (1985), Felder (1993), Jones (1998), Morrison et al. (2003), Dasari (2006) and Moallem (2007) suggest that learners whose learning styles match with the given teaching style tend to become greater academic achievers than those who experience mismatches. Figure 2 illustrates further this relationship in that the highest frequency of mismatches was located in the achievement level of 40-50%, while the highest frequency of matches was located in the achievement level of 60-69.

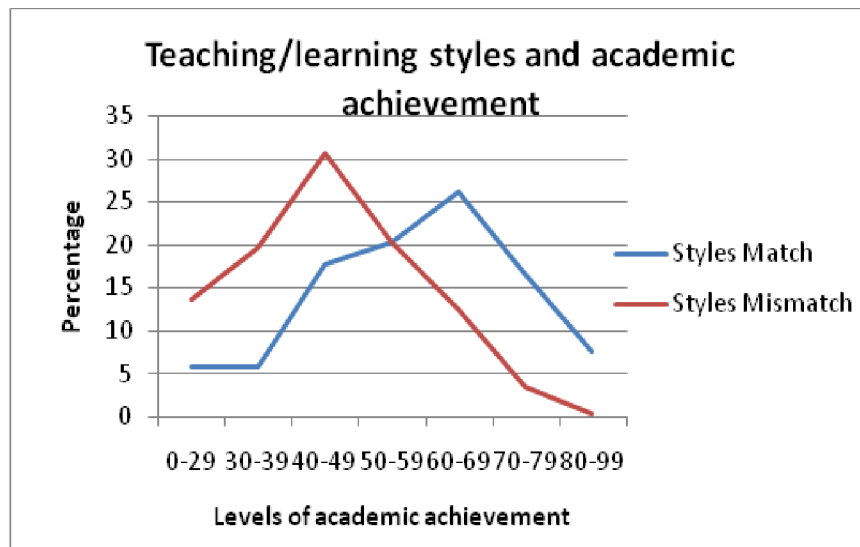


Fig. 2. Relationship between the highest frequency of mismatches

In the final analysis, this study suggests that teachers should solely direct their teaching to match with their learners' learning styles to enhance achievement. Domino (1979), Dunn and Dunn (1979), Morrison et al. (2006), Isemonger and Sheppard (2003) and Dunn (2003) indicate that there is empirical support for the claim that learning in a manner consistent with one's learning style produces better results than otherwise.

However, at certain time intervals, teachers can expose learners to the teaching styles which are different from their preferences to address the weak styles and to prepare them for real life. Learners need to be helped to overcome challenges in their cognitive styles and to develop a more integrated approach to learning by mismatching teaching with their learning styles (Kolb 1984); and to develop the compensation techniques needed for situations in which style conflicts exist (Jones 1998). But the exercise of directing mismatches should be limited and executed in light of the benefits for matching teaching and learning styles. Therefore, teachers should focus upon the identified basic learning style preferences of their learners and utilize learning activities in support of those styles. Therefore it is important to review teaching style theories that can help in determining ways of matching teaching and learning styles of learners in Lesotho schools.

CONCLUSION

Finally, the debates on matching and mismatching teaching and learning styles have been discussed. Suggestions have been made on how to match teaching and learning styles, and the related criticisms also discussed. On the other hand, suggestions have also been made on how to use mismatching to help learners, and the criticisms interrogating this view have also been outlined. The findings of this research indicated that mismatches do exist in the teaching styles of teachers and their learners' learning styles. It was also found that matching teaching and learning styles enhances academic achievement of learners in rural learning ecologies.

RECOMMENDATIONS

In order to match teaching and learning styles as to enhance academic achievement of learners in rural learning ecologies of Lesotho, this study recommends that teachers should match their teaching styles with the learning styles of their learners in most lessons. This implies that lesson planning, presentation and assessment should be directed to matching teaching and learning styles. Teachers should controllably create deliberate mismatches of teaching and

learning styles to challenge learners' weak learning styles. In this case, teachers should also establish and use teaching techniques that could address learners' challenges. In the end, this research proposes that teachers should find ways of matching their teaching styles to their learners' learning styles to improve academic achievement of learners in their schools.

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