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Using the dynamic model of educational effectiveness to detect effective teaching characteristics in the Maldives

HAWWA SHIUNA MUSTHAFA

The Maldives National University

ABSTRACT *The conceptual framework of the Dynamic Model of Educational Effectiveness (DMEE) was used to detect effective characteristics of teaching in the Maldives. The sample consisted of grade four students (N =350) and class teachers (N =31) from eight primary schools in the urban capital city of Male', Maldives. The study is a quantitative research and adopts an experimental design where the second low-inference observation instrument and the student questionnaire of the DMEE was used in the collection of classroom data through multi-stage sampling techniques. Descriptive statistics are then used to describe the basic features of the data in study. Results revealed that there are many dimensions from the DMEE valued at 0. This is an indication that teaching factors such as structuring, application, modelling or questioning did not occur at all in some Maldivian classrooms. However, on an average, across the teacher sample, enough time was detected (3 minutes) for structuring activities, 12 minutes for application activities. Though it is to be noted there are great variations in this find. The most important find from the study is that the minimum value recorded for all the teaching factors in the differentiation dimension is zero indicating there is no differentiated teaching detected in Maldivian classrooms as well. Implications are then drawn for teachers' professional development in the Maldives.*

Keywords: instructional quality, Maldives, professional development, quality of teaching, teacher effectiveness

Teaching effects on students are one of the most influencing factors in student achievements and over all their lifelong accomplishments (Nye et al., 2004). Factors such as teaching skills, methods and effective classroom management plays a very crucial role in the effect a teacher has on student achievement (McCaffrey et al., 2013). However research on teacher effectiveness and its connections to student achievements is a highly debated topic among scholars and researchers. The teacher effectiveness research has its origin back to the 1960s where researchers focused on the whole school approach in detecting effects on student achievements, found that there is not much variance in student achievement that can be explained by educational factors (Warnock, 1975; Eysenck, 1975 & Coleman, 1975). It was only starting from the 1980s that studies started to evidence that overall school experiences mattered in explaining student achievements. After the 1990s and

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the beginning of 2000, the emphasis of educational effectiveness turned to the dynamics of education where the focus became more on classroom or the teacher level factors and connections to student achievements (Kyriakides, 2008), thus determining specific characteristics of teachers leading directly to student achievements (Creemers, 1994; Stringfield & Slavin, 1992; Scheerens & Bosker, 1997).

The effective teaching characteristics

There is enough evidence to demonstrate that the quality of education in the Maldives needs urgent improvement especially in terms of the quality of instructions (UNICEF, 2018). This has indeed become a great policy challenge for providers as well. Students who are in classes where the teacher is less prepared, in terms of lesson delivery and overall lacking effective teaching characteristics, showed significantly lower achievement than those assigned to highly prepared and deemed effective teachers (Sanders & Rivers, 1996). According to Wendel (2000) the effects of an unprepared teacher, as well as their deficiencies in teaching skills and qualifications as well, can have a negative impact on the students' overall well-being even long after the child has left school.

Effective teaching characteristics have been studied extensively by researchers with a focus on both students' socio-economic status as well as the psychological make-up of students as intervening variables. This is because in a typical classroom, there are students from different socio-economic backgrounds, with different learning styles, aptitude, attitudes, perceptions and skills. Hence, it is important to differentiate the instructions of the teacher to cater to the needs of each individual learner in a classroom (Creemers, 1994). Differentiated instructions can be implemented by detecting the needs of the different learners (Walberg & Paik, 2000). Differentiated instruction does not imply different students have different sets of objectives to achieve but rather, the teacher modifies teaching according to the learning needs of each student so that each student achieves the same goals (Creemers & Kyriakides, 2006). Teachers who are effective always strive to offer various differentiated strategies to promote learning among all students in the class.

Not only does the effective teacher differentiate instructions but also closely monitors student learning progress. An effective teacher is one who is highly efficient in classroom routines and ensures sustenance, continuity and consistency in the classroom standards and behaviour. Overall, an effective teacher strives to maintain an environment that is encompassing of all elements that contribute to the highest level of competency in students. Muijs and Reynolds (2000) ascertained that maximum student learning output is achieved if student activities are facilitated by teachers rather then students left alone to do their work in the classroom.

Next, an effective teacher pays attention to lesson transitions between the different activities that are conducted in the classroom. Brophy and Good (1986), stressed on the importance of transitions between the activities conducted during a lesson and also the transitions between the orientation and structuring activities of the lesson. Rosenshine (2012) stressed highly on the importance of letting students know the objectives to be achieved for the day's lesson. He also emphasized the importance of a teacher's role in connecting old learning with new, asking the right

questions and ensuring students are provided with enough opportunities to acquire meaningful learning. Westwood (1996) emphasized the importance of the sub-parts and summaries of the lesson to be reviewed during the lesson progression.

Teacher questioning technique and the kind of questions asked by the teacher is considered as one of the most important parts of an effective lesson. The type of questions that the teacher asks in the classroom is considered highly important in determining teacher quality as well (Cotton, 2003). Typically, in a classroom there are: questions asked by the teacher to students, questions asked by the students to teacher, questions asked by student/s to student/s (Brophy & Good, 1986). Kauchak and Eggen (2012) also stressed on the importance of questioning as a way to elicit information about student motivation for learning, communication and to draw attention of the learner to key content and review of key content. Creemers and Kyriakides (2008) weighed on the two types of questions asked by the teacher in the classroom: process and product questions. The former requiring students to not only answer the questions posed by the teacher but also to justify and reason for the answers presented. Muijs et al. (2014) found that in an effective lesson, the teacher should pose questions at the very beginning of the lesson, during short presentations of the lesson, and also at the very end of the lesson. Kauchak and Eggen (2012), asserts that it is important to acknowledge right answers by students, in an affirmative manner. Kauchak and Eggen (2012), further stresses on the importance of wait-time. Wait time can be defined as the time given by the teacher after a question has been posed. A study done by Westwood (1996) revealed that if the wait time is extended up-to three seconds, it can lead to better student responses.

Another important aspect of effective teaching includes the due importance given by the teacher to assessing students in the classroom. Cotton (2003) stressed on the importance of assessments. He concluded that effective teachers use formative, summative, and diagnostic assessment methods to enhance student learning (Cotton, 2003; Brophy & Good, 1986). Diagnostic assessments help the teacher to identify the prior knowledge and skills of the students and it can further bring to teachers' attention any doubts that the students may have on the topic. Formative assessments reduced students' doubts considerably and a summative assessment can help the teacher to determine what the student has learnt at the end of a teaching segment (Cotton, 2003).

An effective teacher is one who practices scaffolding with her students in the classroom. Scaffolding is the process by which a learner is supported by the teacher in order to break down a complex skill into manageable subtasks or chunks that would help the learner to sequence, select problems, and start practicing on a new skill with the help of cue words and/or checklists so that they remember the steps as they go about imbibing the new activity or skill e.g., writing their own piece of poetry (Archer & Hughes, 2011). In new learning / modelling, it is the responsibility of the teacher to guide students into doing an activity that would lead to the activation of the students' metacognition strategies (Ellis & Worthington, 1994).

Additionally, an effective teacher ensures that her classroom has a positive climate favourable for learning. According to Jacobsen et al. (2009), a positive classroom climate creates a conducive environment for students to learn, where students' emotional wellbeing is taken care of, and where students feel safe, secure

and have positive feelings of being included. According to Jones and Jones (2012), the interactions that take place in a classroom are equally important for a positive classroom climate where there are strong student and teacher connections and good communication. A good classroom climate is also one where the class activities are well organized, task/ goal oriented and systematic. According to Dunbar (2005), these classrooms will also have clear expectations from what is expected from both students and the teacher. It is also important to know that a positive classroom climate also comes with effective instructions. Classroom management problems are also considerably reduced through effective teaching and active engagement of students in a highly differentiated learning environment (Jones & Jones, 2012). An effective classroom also has its own set of rules to follow at the beginning of year which includes both a code of conduct and acceptable classroom behaviours (Kauchak & Eggen, 2012), as well as a negotiated code of conduct with students, set in a democratic manner to achieve maximum benefit from setting rules, with the teacher being clear about consequences of misbehaviour which is acceptable to students. It is important that the teacher avoids threats and remains consistent with the laid-out rules. In U.S., Pas et al. (2015) looked at teacher behaviour in the classroom in relation to student behaviour with regards to classroom rules and norms, and it was revealed that students who are consistent in behaviour tend to show lesser disorderly conduct in the classroom and vice versa such as displaying excessive talkativeness and talking off topic and even bullying. Stronge et al. (2011) concluded that teachers who maintain a positive classroom climate through good classroom management and positive teacher-student relationships tend to get better grades and results from students.

Chetty et al. (2014) concludes that students who had been taught by highly effective teachers were more likely to complete tertiary education, earn more, live in higher income neighbourhoods and also are more likely to save money for retirement. Thus, taking the above into consideration, as well as the often-laid criticisms on Teacher Effectiveness Research (TER) that not enough attention is paid to studying effective teaching based on theoretical grounds (Reynolds et al., 2011), the Dynamic Model of Educational Effectiveness (DMEE) research was adopted for the conceptual framework as well as the theoretical underpinnings for the study. The dynamic model is considered to be "the most up-to-date multi-level model of educational effectiveness" (Scheerens, 2013, p.10) and attempts to condense the main findings of TER and encapsulates all factors operating at the teacher level that are considered to be related to effective student learning from literature.

Conceptual Framework of the Study

The Dynamic Model of Educational Effectiveness

The last 15 years has seen the rapid expansion of school educational services and the importance the world has placed in investing and advancing in the primary years of children's life and education (UNESCO, 2015). With the increase in the number of schools/institutes catering to the well-being and education of primary students, it has become critical to ensure effective teachers are being employed

at this stage of children's schooling. The DMEE is presented in figure 1. As indicated in figure 1, the DMEE is made to attain data at different levels of the school system (i.e., at the student, teacher (classroom), school, and the overall educational system (Creemers & Kyriakides, 2006). At the student level, it refers to those factors that operate around and within the student, which in turn, aids student achievement. At the teacher (classroom) level, it refers to those factors that influence the classroom teaching and learning. At the school level, it refers to those factors that aid in making and assessing school policy for teaching and learning; and at the education system level, it aims to influence the system in developing and evaluating educational policy for teaching and learning (Creemers & Kyriakides, 2006).

The key features of the Dynamic Model of Educational Effectiveness are: it operates on multi-level factors of effectiveness; many of the factors which function at the same level may be related to one another; and while grouping of factors is not possible, it can be measured and defined using parallel dimensions. This enables each of the factors to be considered as multi- dimensional construct and thus, be in line with the parsimonious nature of the DMEE. Some of the other features include a special focus that is given to the time students spend on tasks and opportunities presented to them as learning and most importantly the quality of instruction of teachers. All these are essential indicators of higher student achievement (Creemers & Kyriakides, 2006). High percentage of the variance in student achievement can be described by the influence of the student background factors (Brophy & Good, 1986). The DMEE operates on background influences such as student socio – cultural and economic factors as well as characteristics such as aptitude, motivation, expectations, personality and thinking style of students (Creemers & Kyriakides, 2006).

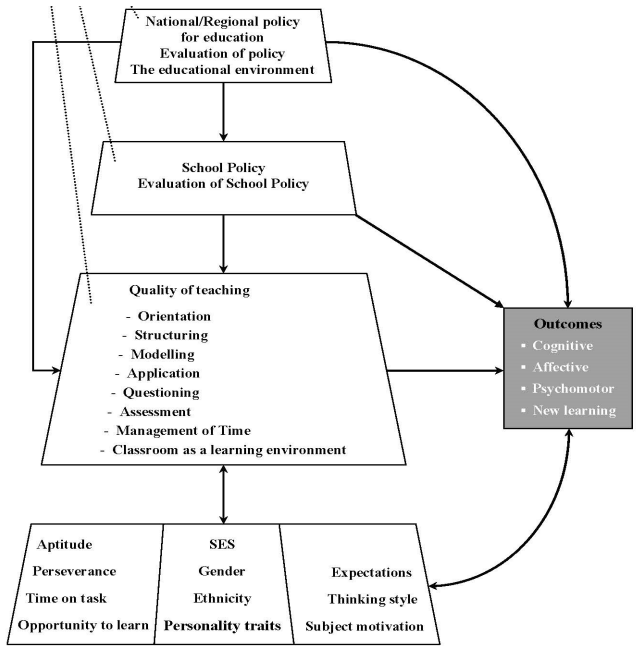

Figure 1. The Dynamic Model of Educational Effectiveness {Adopted from Creemers & Kyriakides (2008a)}

Teacher level factors of the DMEE

In the DMEE, the classroom / teacher level refers to eight specific factors which are consistent with student learning outcomes (e.g., Brophy & Good, 1986; Creemers, 1994; Doyle, 1975; Kyriakides et al., 2002; Muijs & Reynolds, 2001; Rosenshine, 1995). The eight factors are: orientation, structuring, questioning, teaching modeling, applications, management of time, teacher role in making the classroom a learning environment, and assessment (Creemers & Kyriakides, 2006).

These factors are consistent with student learning outcomes (e.g., Brophy & Good, 1986; Creemers, 1994; Doyle, 1975; Kyriakides et al., 2002; Muijs & Reynolds, 2001; Rosenshine, 1995). A summary of the factors are as follows.

Table 1
Main Elements of the Eight Factors of the Dynamic Model

Factors	Main elements
1) Orientation	a) Providing the objectives for a specific task/lesson/series of lessons; b) challenging students to identify the reason(s) that an activity is taking place in the lesson.
2) Structuring	a) Beginning with an overview and/or review of objectives; b) outlining the content to be covered; c) signalling transitions between lesson parts; d) drawing attention to, and reviewing, main ideas.
3) Questioning	a) Raising different types of question (i.e., process and product) at an appropriate difficulty level; b) giving students time to respond; c) dealing with student responses.
4) Teaching modelling	a) Encouraging students to use problem-solving strategies presented by the teacher or other classmates; b) inviting students to develop their own strategies; c) promoting the idea of modelling.
5) Application	a) Using seatwork or small-group tasks in order to provide necessary practice and application opportunities; b) using application tasks as starting points for the next step in teaching and learning.
6)The classroom as a learning environment	a) Establishing on-task behaviour through the interactions that take place (i.e., teacher-student and student-student interactions); b) Dealing with classroom disorder and student competition by establishing rules, persuading students to respect them and implementing the rules.

7) Management of time	a) Organising the classroom environment; b) maximising engagement rates.
8) Assessment	a) Using appropriate techniques to collect data on students' knowledge and skills; b) analysing data in order to identify student needs; c) reporting the assessment results to students and parents; d) evaluating their own teaching practices.

The measurement dimensions of the DMEE

The dynamic model works under the assumption that the teaching factors can be measured under the five dimensions of frequency, focus, stage, quality, and differentiation (Creemers & Kyriakides, 2006). The dimension of frequency is a quantitative dimension that measures the teacher factors in a quantifiable manner. On the other hand, the other four dimensions of the model measure the qualitative aspects. According to Creemers and Kyriakides (2006), by using the measurement dimensions, it helps to improve the teachers' teaching skills since both quantitative and qualitative feedback can be given.

Methods

The research was conducted as part of a longitudinal study on the impact of instructional quality on student learning in primary schools of the Maldives in the urban capital city of Male' which has a total primary school population of 14 schools. The Male' region was selected as firstly, it was more accessible in the process of data collection, and secondly this is the most populous city in the country with maximum number of primary schools situated in one island. Using the stage sampling procedure, the main four wards/ districts of the region were selected i.e., the city is divided into six divisions, four of which were randomly selected: Henveiru, Galolhu, Maafannu and Macchangoalhi. There are a total of 14 schools catering to grade four in these mentioned wards/ districts. All the 14 schools were approached, however only eight schools consented for the study. Therefore, eight schools representing about 50% of the primary school population in the region were selected. All grade four classes/ teachers (n=31) and their students who received parental consent (n=350) participated in the study. Out of the sample, five were public schools whereas three were private schools.

Instruments

Two instruments from the DMEE were used to measure the quality of teaching by studying the different variables at the level of the classroom i.e., the second low inference instrument (observation method) and the student questionnaire (student rating). Students' insight into the actual teaching and learning was collected through a likert scale of the DMEE. This perspective is important since students are at the receiving end of education that is imparted by the teacher (Creemers et al., 2010). They have first-hand contact with their teacher and therefore, their

perception becomes extremely important. Studies have been able to determine student ratings as a reliable source of measure of teaching behaviour from students at primary years too (Driscol et al., 1985). However, it is important to highlight that a combination of student ratings together with other data sources, as in the case of this study (i.e., classroom observations), may provide better insight to the functioning of the teacher factors and the five measurement dimensions of the DMEE, thus, providing added support to the reliability and validity of using student ratings as a data source.

Based on evidence from data collected within several OECD countries, OECD (2015b) has recognized the observation data collection method as a valid form of collecting teacher behaviour data within the classroom (Isoré, 2009). Therefore, classroom observation has been identified as the most objective and reliable method to collect information on teachers' teaching behaviour (Worthen et al., 1997).

Data Analysis

Descriptive statistics were run on the data in order to detect the teaching characteristics deemed as effective for student achievement, through summaries about the sample and the measures. The main data set from the project was also subjected to multi-level modelling (refer to Musthafa, 2021). Multi-level modelling enables an effective way of identifying those variables at the student and teacher level that are associated with student learning outcomes (Snijders, 2011).

Results and Discussion

Table 1 gives the background information of the teachers from the teacher sample for the study. In the table, the percentages for each of the teacher groups are specified. The following observations arise from table 1. First, it can be observed that all of the teachers in the sample were female (100%). This is because the majority of teachers in primary grades in the Maldives are female. In fact, none of the schools from which the data was collected had class teachers who were male. On the other hand, looking at the age range, it can be observed that there is a good distribution for teachers' age except for the group of teachers above 45 years which represented only 6.5% (n=2) of the teacher sample. The main reason why the teacher's age groups were divided into four groups is to check the representation of the population in terms of these four age groups. The less number of teachers in the age group above 45 years (n=2), is mainly due to the tendency that Maldivian teachers tend to leave schools and pursue higher education as a general trend. With the various scholarship opportunities available to teachers through the Ministry of Higher Education of the Maldives it is expected that they leave at some point in their career to pursue higher studies.

Looking at the qualification of teachers, it is observed that none of the teachers has a PhD qualification. Therefore, this kind of distribution is not unusual as in the case of the Maldives with only about 140 PhD holders overall (Riyaz, 2017). Looking at the teaching experience, it can also be observed the data has a good distribution across the sample.

Table 2
Descriptive Statistics of the Teacher Sample in Terms of Age, Experience and Qualifications

Factors	Categories	Frequency	Main elements
Gender	Male	0	0.00%
	Female	31	100.00%
Age	Under 25	8	25.80%
	Between 26 - 35	12	38.70%
	Between 36 – 45	9	29.00%
	Above 45	2	06.50%
Highest Qualification	Diploma	9	29.00%
	Degree	14	45.20%
	Masters	8	25.80%
	PhD	0	00.00%
Teaching Experience	0-3 years	7	22.60%
	4 -7 years	8	25.80%
	8-13 years	11	35.50%

Results from the student questionnaire

The data that emerged from the student questionnaire showed that the mean that was obtained for the teacher factors were between 1.23 and 4.25 respectively. The highest means obtained were in the factors of structuring (focus dimension) with a mean score of 4.25; classroom as a learning environment / teacher – student interaction (frequency dimension) obtained a mean score of 4.064 and assessment (frequency dimension) obtained a mean score of 4.143. The high mean scores indicate more occurrences of effective teacher behaviours in the classroom. The teacher factor with the lowest mean score was found to be of questioning under the differentiation dimension with a mean score of only 1.23 and closely followed by the teacher factor of classroom as a learning environment / dealing with misbehaviour" (frequency dimension) lacking in teachers. These two low mean scores are an indication that the students thought that these factors were lacking in the teacher as compared with the rest of the factors.

Secondly, it can be observed that overall, all of the standard deviations are very low for all the teacher effects. It is also evident from the table, the standard deviation of the means for all the teacher factors was between 0.15 and 0.38 which is an indication that the teachers did not vary a great deal in their teaching behaviours from the students' point of view. For instance, with the quality dimension of application and also the quality dimension of questioning, the standard deviation scores were comparatively small (SD =0.15). On the contrary with the factor of differentiation of the questioning dimension, the standard deviation is higher

(SD = 0.38) and similarly the focus dimension of dealing with misbehaviour the standard deviation is also higher (SD = 0.36).

Table 3
Descriptive Statistics: Data Emerging from the Student Questionnaire

Teacher Factors	Dimensions	Min	Max	Mean	SD
Orientation	Quality	3.2	4.5	3.98	0.24
Structuring	Focus	3.6	5.0	4.25	0.23
	Stage	2.7	4.1	3.20	0.26
	Quality	3.2	4.1	3.79	0.17
Application	Stage	2.7	4.3	3.26	0.39
	Quality	2.4	3.3	2.83	0.15
	Differentiation	1.9	2.8	2.39	0.16
Management of Time	Frequency	2.7	4.8	3.04	0.24
Questioning	Frequency	2.1	4.3	2.72	0.23
	Quality	3.0	3.9	3.39	0.15
	Differentiation	0.7	2.5	1.23	0.38
Modelling	Modelling	3.3	4.2	3.81	0.19
Classroom as a learning Environment / Teacher – Student Interaction	Frequency	3.2	4.5	4.06	0.27
	Quality	3.0	4.4	3.77	0.30
Classroom as a learning Environment / Dealing with Misbehaviour	Frequency	1.2	3.8	1.73	0.28
	Focus	1.5	4.6	3.75	0.36
	Quality	1.8	3.1	2.41	0.18
Assessment	Frequency	2.8	4.6	4.14	0.38
	Quality	3.3	4.9	3.89	0.24

Note: The lowest minimum (min) score that can be obtained is 0 and the highest maximum (max) score that can be obtained is 5. The frequencies are recorded in seconds except for the 'questioning factor' which is in minutes

Results from the second low inference observation instrument

The following observations arise from the results from the second low inference instrument. It was alarmingly evident that there are many dimensions with minimum values as 0. This is an indication that these teaching factors did not occur at all in some of the Maldivian classrooms. This indicated that there are some Maldivian teachers who do not give any structuring, application, modelling or questioning

activities in their classroom. This is especially true for the differentiation dimension where in all of the factors, the minimum value is 0. In the orientation factor, it is evidenced that there are no differentiation activities by some teachers. It is also evident that enough time is spent on orientation activities with a mean average of about 6 minutes (orientation – duration mean =11.84 minutes). This is good but not enough when considered out of 40 to 45 minutes of class time. Looking at the standard deviations, the differentiation dimension recorded the lowest score, indicating clearly that the teachers have not been able to cater to the needs of the children in a mixed ability classroom by differentiating instructions.

It is also evident that enough time is spent on structuring activities that is about average three minutes with structuring factor duration mean recorded at 2.92 minutes. Once again, this is satisfactory but not good enough when considered out of 40 to 45 minutes of class time. Similar to orientation, the standard deviations in structuring under the differentiation dimension has the lowest score, indicating that the teacher did not cater to the needs of all children in a mixed ability classroom by differentiating instructions.

It is also clearly evident from the table that the teachers have spent about 12 minutes (application – duration mean =11.84 minutes) on application activities on an average. This is an indication that, Maldivian teachers spend enough time on application activities in the class. There are, however, great variations. The observer detected teachers who spent 0 minutes to teachers who spent 35 minutes on application activities which is a critical issue that needs to be addressed in a Maldivian classroom. In class time ranging from 40 - 45 minutes, if a teacher spends 35 minutes only on an application activity, then this needs to be critically looked into as a time management issue to be addressed. It is also evident that the standard deviations are high on almost all of the dimensions of the application factor.

It is also observed that a teacher has spent about 22 minutes on the 'modelling factor' of the duration dimension. This is an extreme case and it is once again problematic for the Maldives and needs to be addressed as a critical issue in classroom teaching and learning. If a teacher spends 22 minutes out of the 40 to 45 minutes' class time, then she leaves very less time for the other factors and dimensions of teaching that need to take place in an effective lesson. It is also evident that in the modelling factor, the dimension of differentiation cannot pick up effects despite the fact that there are teachers who spend a lot of time in modelling. The reason being that the mean value for differentiation is only 0.28 which is very low. This is a strong indication that the needs of the children in a mixed ability classroom by differentiating instructions is not being catered to.

Further to this, in the questioning factor, it is alarming to see Maldivian teachers who don't ask any questions to students during the 40 to 45 minutes teaching time in the classroom. This is an indication that there were teachers who didn't raise any questions to students. In the questioning dimension, the waiting time indicates the amount of time the teacher waits after raising a question to the students. This is indicated in seconds. The average mean recorded on this factor is about 20 seconds (mean =20.71) which is once again a disagreeable finding. The standard deviations indicated, the differentiation dimension has the lowest score, signifying the teachers were not able to cater to the needs of the children in a mixed ability classroom.

Table 4
Descriptive Statistics Emerging from the Second Low Inference Observation Instrument

Factors	Dimensions	Min	Max	Mean	SD
Orientation	Stage	1.0	4.0	1.50	0.80
	Duration	1.0	23.0	5.95	3.62
	Focus	0.0	2.0	0.44	0.69
	Quality	1.0	3.0	2.15	0.84
	Differentiation	0.0	1.5	0.72	0.48
Structuring	Stage	0.0	5.0	2.45	1.28
	Duration	0.0	12.0	2.92	2.14
	Focus	0.0	3.0	0.35	0.59
	Quality	0.0	2.5	1.23	0.63
	Differentiation	0.0	1.5	0.57	0.47
Application	Stage	0.0	7.0	4.14	1.65
	Duration	0.0	35.0	11.84	6.90
	Focus	0.0	2.0	0.51	0.61
	Quality	0.0	2.0	1.55	0.56
	Differentiation	0.0	1.0	0.77	0.42
Modelling	Stage	0.0	9.0	3.99	2.48
	Duration	0.0	22.0	7.61	6.48
	Focus	0.0	3.0	1.53	1.22
	Quality Teacher role	0.0	3.0	1.87	1.20
	Quality - appropriateness of the model	0.0	2.0	0.82	0.50
	Quality Stage of the lesson	0.0	2.0	0.78	0.69
	Differentiation	0.0	1.0	0.28	0.45
Questioning	Stage	0.0	18.0	8.95	3.55
	Waiting time in seconds Frequency	0.0	53.0	20.71	10.53
	Focus	0.0	3.0	1.51	0.96
	Quality -type of question	0.0	2.5	1.45	0.54
	Quality reaction if no answer from pupils	0.0	9.0	5.25	3.20
	Quality feedback reaction to student	0.0	3.0	2.35	0.67

Quality feedback reaction about the answer	0.0	3.0	2.38	0.63
Differentiation	0.0	1.0	0.71	0.44

Note: The lowest minimum (min) score that can be obtained for quality and focus dimension is 1 and the highest maximum (max) score that can be obtained is 3. The lowest minimum (min) score that can be obtained for differentiation dimension is 0 and the highest maximum (max) score that can be obtained is 1. The duration for all factors is in minutes except for questioning which is in seconds.

Recommendation and Conclusions

As stated earlier, the quality of instruction in the island nation is a major challenge facing the country, both in terms of inputs and outcomes (Asian Development Bank, 2015). The disparities across the Maldivian islands are felt in all sides of education affecting employment opportunities for island populations and this, inturn reduces access to a qualified and motivated teaching workforce (Di Biase & Manik, 2020; Nazeer, 2017). The finding that there are teachers who did not give any structuring, application, modelling or questioning activities in their classroom indicates that the quality and effectiveness of teaching imparted by teachers needs to be addressed urgently. Research findings (Hanushek, 2011) has emphasized that the role and quality of teachers in student learning cannot be diminished. Even though the present research did not have untrained teachers as samples, it is important to highlight that there are untrained teachers in the Maldivian school system. According to School Statistics (2018), the percentage of untrained teachers working in primary schools has dropped to approximately 6% from 23% in the year 2010. However, with over 500 untrained teachers still in the system, causes serious learning issues to students (MOE, MOHE 2019). This indicates that these untrained teachers teaching in primary schools will have a cumulative effect further up into the secondary education system as well (Asian Development Bank, 2015).The fact that these teachers were guided on the purpose this research, yet did not give any structuring, application, modelling or questioning activities in the classroom needs to be addressed through professional development programmes that are targeted specifically to these areas of classroom teaching.

Another interesting finding picked up was that the standard deviations on the differentiation dimension recorded the lowest score, indicating clearly that the teachers have not been able to cater to the needs of the children in a mixed ability classroom by differentiating instructions. Differentiated instructions require that the teacher prepares well through proper planning and classroom readiness to cater to individual needs of students. This requires a combination of knowledge of differentiating instruction on the part of the teacher and including the differentiated instructions in all the three stages of learning that is lesson planning, lesson implementation as well as assessments.

A lot of programmes have been formulated towards improving the teacher quality in the Maldives. However, reviewing through most of the teacher observation instruments that are being used in some Maldivian schools shows that most

instruments have been set, targeting school level factors in many of the evaluation criteria (e.g., classroom equipment, learning materials available in class). There are two major approaches to teachers' professional development which are the Competency-Based Approach (CBA) and the Holistic Approach (HA) (Kyriakides et al., 2012). In the competency-based approach, teachers' competency is the main focus whereby teachers are taught teaching skill development strategies by people of expertise and teachers are supposed to master each skill separately. This method has been criticized for not allowing space for critical and creative thinking in the teacher. The holistic approach, on the other hand, encourages teachers to independently reflect on their teaching experiences and beliefs. A holistic approach seeks to fully activate all aspects of the learner's personality including intellect, emotions, imagination and body for more effective and comprehensive learning (UNESCO & IBE, 2008a). A research undertaken by Demetriou and Kyriakides (2012), concluded that teacher's professional development is significantly improved when training programmes are more classroom driven and when recent findings from teacher effectiveness research is well considered, specifically when theory oriented and a model based approach such as the DMEE is considered as the theoretical framework for improving teachers professional development.

Through the findings of this study, the generic markers for effective teaching have been identified detecting the specific teaching characteristics in teachers which are lacking as well as which are present in the Maldivian teachers, providing a basis for stakeholders in the country to implement professional development courses at teacher (classroom) level aimed specifically to improve these characteristics. The research also introduces to the country research instruments that are able to provide valid information on teacher factors that are imperative to ensure student achievement (Teddlie et al., 2006). It is important to highlight that teachers and other stakeholders can use the instruments from the Dynamic Model in order to collect data about quality of instruction and in turn develop various school improvement plans and projects.

Additionally, the teachers' professional development should focus on how to address specific groupings of teacher factors associated with student learning instead of isolated teaching factors, as proposed by the competency based-approach (Sprinthall et al., 1996). Hence, professional development should include the whole range of teacher factors based on a specific theoretical framework such as the Dynamic Model which provides the possibility for establishing an evidence-based and theory-driven approach for policy development. Hence, for the Maldives, it is argued that keeping in line with the DMEE, the combination of student ratings together with classroom observations may provide a better insight as to the functioning of the teacher factors and the measurement dimensions of effective teaching characteristics in the classroom.

One of the main limitations of the present study is that it does not have a representative sample of the whole country. Based on this limitation, one of the recommendations for further research is to select a country representative sample to find out how the teacher sample is classified across the factors and dimensions of the Dynamic Model of Educational Effectiveness through which identification of professional needs of teachers can be detected country wide.

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