The Effectiveness of the Cascade Model for In-service Teacher Training in Nepal

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ABSTRACT

The cascade model, a mechanism delivering training messages from trainers at the central level to trainees at the local level through several layers, is largely used for in-service training, as it can deliver many trained teachers quickly and economically. However, despite of its advantages, it is often criticized for its ineffectiveness, because the message is often distorted through long-distanced one-way process, and it hardly makes change at classroom. As most developing countries can afford only cascade, this study is examining if it is indeed ineffective through the case study research on in-service training for multigrade teaching conducted in Nepal for twenty months. First, the inputs of the training including training materials, facilities and the characteristics of trainers and trainees were studied. Second, the process of three layers of training, Training of Trainer at regional level, TOT at district level and local in-set training for teachers, were observed. Third, the classroom practice of selected trainee-teachers before and after the training was compared to examine the difference. The result is that intended messages were distorted, but some of key concepts were transferred and reached teachers. Then the teachers adopted them in their own perception to solve their own problems at classroom. Although some of practice was not delivered as intended, the core concepts survived in the long journey throughout the layers.

Keywords: Teacher Education, In-Service Training, Cascade Model, Training Evaluation, Nepal and Multigrade Teaching.

1. INTRODUCTION

The teacher is the most decisive factor in the qualitative improvement in primary education [1]. A large number of unqualified teachers are the crucial obstacle to improving the quality of education in just beginning courtiers [2]. Teacher training is a direct means to enhance the quality of teaching and student achievement. In-service training is one of the strategies for improving the knowledge and skills of unqualified teachers already employed [3].

When in-service training is delivered, the cascade model is often used. The cascade model means that the 'training messages flow down from experts and specialists through several layers of personnel and eventually to the teachers' [4]. It has been used for many years, particularly in industry and commerce [5].

The cascade model is a strategy for training large numbers of people within a limited period of time [5]. It can deliver a large number of trained teachers relatively quickly and to reduce the cost of training. Therefore, it is suitable for staff development and the training of facilitators [6].

Despite its advantages, the cascade model is often criticised. Even though it is economically advantaged, if teachers don't change their practice at classroom at last, not providing training at all could be cheaper than conducting meaningless trainings. Thus this study tries to examine through a case study conducted in Nepal for twenty months, whether trainings provided by the cascade model are effective, and if so, what the causes of its bitter criticism are.

2. DISADVANTAGES OF THE CASCADE MODEL

Despite its advantages, the cascade model is often criticised. Its main weakness is the distortion of the messages transferred during the training, because they are passed down through many different levels of personnel. The intended messages are often altered and their effects are diluted through miscommunication and different interpretations of the same messages [7]. The cascade model envisages a series of consecutive training processes. The participants are constantly changing in the process [6]. Each training takes place as a result of the previous one, in principle imparting an agreed and consistent body of knowledge, skills and attitudes, but evaluation studies in the UK reveal that there is no continuity within a three-layer cascade model. Training plan and guidelines are only loosely followed in the processes of the training. Often different strategies are adopted and new elements are introduced [5].

The second weakness of the model is the distance between the central and the local level. McDevitt [6] concludes that 'if you are too far away from the source, you cannot get soaked.' Additionally, there are few opportunities to check process and outcomes of each stage [6]. The evaluation study of a three-layer cascade model in Uganda indicates problems especially at the lowest level [7]. The trainers for the training at the lowest level had not internalised the messages from their own training. Consequently, they could not perform well for some steps of the training contents.

A third limitation is one-way transmission. The cascade model is constructed according to a centre-periphery and top-down structure, so that it is too inflexible to respond to the needs at grassroots level [6]. Additionally, the higher levels often lack experience of primary school teaching [4]. This makes it difficult to predict the needs of the lowest level and widens the gap between levels. The evaluation study in Botswana reveals that the cascade model fails to be a means of transferring ideas

or of changing behaviour, because it has little impact on commitment [6]. A process of justifying or validating communicated ideas is needed in order to transfer new ideas which are perceived and comprehended [8]. A top-down approach does not encourage participation and commitment. Consequently a justification of the new ideas which need to be transferred in order to change behaviour hardly takes place.

3. DEBATES OVER THE CASCADE MODEL

Some researchers believe that this failure lies with *the cascade model itself* [6]. Others argue that the quality of a cascade model depends on *the quality of planning and implementation*, rather than on inherent weaknesses of the model itself [5]. They suggest the ten components of conditionality to maintain the quality of planning and implementation as follows: (1) To run a successful cascade model, the trainees and their needs are to be well defined. (2) Clear training objectives are to be set. (3) It should be supported by high quality consistent training material. (4) The trainers are to be carefully selected for their competence as trainers and their understanding of the particular knowledge and skills which are to be transferred. Cascade training is only effective if the trainers are fully familiar with the practice and not only the theory, and sufficient time is given to the trainers to acquire new knowledge. (5) The role and function of each actor needs to be defined. (6) Each stage has to provide sufficient time for trainers to prepare, and for trainees to absorb the messages. (7) Each stage should be well structured. (8) Any ambiguity in training objectives and materials has to be removed in order to avoid the risk of personal interpretations. (9) Commitment at the local level is needed. (10) The training process should be supervised to ensure the following of training procedures and the accountability of the trainers [5, 7].

4. MULTIGRADE TEACHING TRAINING IN NEPAL

In Nepal, one of the most significant issues in education is the lack of teachers. The average number of teachers per primary school was 2.03 in 1975. In other words, two teachers had the responsibility for three to five grades in one school. As a result, a teacher has responsibility for more than two grades at the same time in these schools. This form of class management is called multigrade teaching. However, as the standard of schooling in Napal is based in monograde teaching, most of teachers were not trained as multigrade teachers. Therefore, the government of Nepal has been providing in-service training on multigrade teaching.

Multigrade Teaching Training is organised in a three-layer cascade system. The training studied in this study was held as follows. First, Master Training of Trainers (MTOT) is organised in six zones throughout the country for one and half days in January. A section officer from Primary Teacher Training Unit (PTTU) was the master trainer. Three School Supervisors or Resource Persons from six districts participated as trainees. Second, District Training of Trainers (DTOT) is organised in the districts for 4 days in May. The trained School Supervisors and Resource Persons of MTOT return to their own districts and train other School Supervisors and Resource Persons. Third, Resource Centre Training (RCT) is organised in the Resource Centres (RCs) for ten days in July and August. The trained School Supervisors and Resource Persons of DTOT return to their RCs and train primary school teachers. All primary teachers of the RCs are called in for RCT.

Table 1 Cascade Structure of Multigrade Teaching Training

training	trainers	trainees
MTOT (zones)	section officers from PTTU	selected school supervisors and resource persons
DTOT (districts)	MTOT trainees	other school supervisors and resource persons
RCT (resource centres)	DTOT trainees	primary school teachers

5. RESEARCH METHODS

This is a single case study and does not mean to generalise the idea, but it means to reveal the practice of all of the process of one single training held in a whole nation of Nepal in order to show a whole picture of cascade, following all of the three levels of the training. As it is unfeasible to gather detailed data of all trainers and trainees in its 75 districts, Nuwakot and Kavre districts were selected as samples at local level, because 94.66% (2000) and 84.71% (2001) of primary schools in these two districts are multigrade. In order to confirm the results from such a small scale research, compared with the situation of a whole districts, the focus group discussions with all of RCT trainers of the two districts were held.

Firstly, in order to evaluate training inputs, the relevance of the training curriculum, the characteristics of training developers, trainers and trainees, and the environment for the training were examined through document analysis on the contents of the training materials. Then interviews were held with trainers and trainees of 14 selected schools. Additionally, questionnaires and self evaluation forms were distributed to the total number of 108 trainees (75 for Trishuli RC, Nuwakot district and 33 for Sunthan RC, Kavre district) who participated in the training. Of 108 trainees, 104 trainees (73 for Trishuli RC and 31 for Sunthan RC) filled in the questionnaires on the first day and/or the self-evaluation forms on the last day of the training.

Secondly, in order to evaluate training process, the following layers of the training were fully observed: MTOT sessions in Chitwan, which covered Nuwakot and Kavre districts, for one and half days; DTOT at the two districts for four days; and two RCTs at Resource Centres in both districts for ten days. Through the observation, how the training messages were transferred over the cascade and its environment were examined.

Thirdly, in order to evaluate training outputs, acquired new knowledge by the trainees was examined through self evaluation forms completed by 108 teacher-trainees. Then their competency was examined through observation of practice teaching during the training. Finally performance ability at classroom gained by the training was examined

through comparison of classroom practice of selected trainees before and after the training. These results were confirmed by focal group discussions by all of RCT trainers in the two districts.

These data were analysed based on 'small school' of 'school effectiveness' research framework to clarify the effects of the cascade model and its possible causes were identified.

6. INPUTS OF THE TRAINING

Training Curriculum

The training material for Multigrade Teaching Training was developed by ten members of the Primary Teachers' Training Unit (PTTU), in co-operation with foreign and Nepalese advisors [9]. The authors started preparing in 1994 and the package was finally published in 1998. The package has been used for Multigrade Teaching Training since 1999. According to my interview with one of the authors, none of them had had teaching experience in a multigrade primary school.

The training has the following four objectives [9]:

- To prepare or plan educational activities required for multigrade teaching
- To prepare Self-Learning Activity (SLA) required for multigrade teaching
- To manage classes in a way conductive to multigrade teaching
- To teach the students in two or more classes simultaneously

These objectives, especially points three and four, are so vague that their meaning is not clear. Moreover, the ideal model of multigrade teaching, which is supposed to be transmitted by the training programme, is not presented in this material.

However, the following three components, meant to assure the success of the class organisation, are highlighted in the training material [9]: (1) using *T and AMT classes.* The training material states that when two or more classes are taught by one teacher, one class should be the main class, taught by the Teacher (T class), and other classes should be additional classes, provided with SLA and supported by a student Monitor (AMT classes); (2) providing *Self-Learning Activity (SLA), and* (3) a *monitor* selected among the students of a grade group in order to take care of the class during the physical absence of the teacher from the classroom, while he/she is teaching in other classes.

The training material is divided into ten sections (Table 2). Each section is to be covered in one day. Although the Multigrade Teaching Training programme focuses on only multigrade teaching, the topics of the training material are not always directly related to multigrade teaching. Some topics concern general pedagogy rather than multigrade strategies.

Table 2 examines whether each topic is directly related to multigrade teaching. The topics of the first section are all directly linked to multigrade teaching. The first section gives an introduction to multigrade teaching and gives an idea of what multigrade teaching means. The topics of the second section are also mostly relevant to multigrade teaching, introducing multigrade teaching strategies, introducing the production of a special timetable for multigrade classes and classroom management dividing a lesson period into teacher's direct teaching time (T class) and self study class with a student monitor (AMT class) .

However, evaluation, examination and the keeping of student records are rather common issues which equally concern monograde teaching. The third section starts with multigrade teaching planning and multigrade teaching techniques, but the central argument of the section is concerned with general, monograde pedagogical issues. The fourth section has nothing on multigrade teaching, but explains how to generally use the blackboard and textbooks. The remaining sections focus on the practice of multigrade teaching, this practice is not concerned with the question of how to deal with multigrade teaching on a conceptual level.

Table 2 Contents of the Training Material

days		Relation to multigrade teaching
1	types of teaching	√
	situation of multigrading	√
	need for multigrade teaching	√
2	**time division (T and AMT classes)**	√
	classroom management	√
	student management with student monitors	√
	evaluation and examination	
	student records	
3	lesson plans	√
	multigrade teaching methods	√
	activities for creative activity	
4	resources for teaching	
	skills required for teaching	
5	**setting Student Learning Activities (SLA)**	√
6	use of SLA	√
7	demonstration class	√
8, 9	practice teaching	√
10	Review	√

Trainers

According to the background information of the trainers from PTTU to RC level, although all trainers have relatively high qualifications and most of them have teaching experience – as well as experience as a trainer – there are differences between MTOT/DTOT and RCT levels. While all trainers above DTOT level have higher qualifications such as master's and bachelor's degrees, none of them has teaching experience in a primary school. They have had any experience of neither multigrade nor monograde teaching at primary schools. Therefore, their knowledge of multigrade teaching is theoretical, rather than based on their own experience.

RCT trainers on the other hand normally have teaching experience in multigrade primary schools, although their academic qualification is slightly lower than MTOT/DTOT trainers. Besides, they are not only trainers, but at the same time Resource Persons or headmasters who are familiar with real practice in the schools. Thus the RCT trainers have knowledge on multigrade teaching from their own experience. Here we can see the gap between MTOT/DTOT and RCT levels.

Trainees

Table 3 shows that there are two types of teachers among the trainees. First, there are teachers who are currently working in multigrade schools and will continue to teach multigrade classes after the training. A second type is those teachers who are currently working in monograde schools and have never taught multigrade classes. They most probably will not have any occasions to teach multigrade classes.

Of the overall 104 trainees in both districts, 32 teachers (31%) are currently multigrade teachers, and 72 teachers (69%) are monograde teachers. In other words, only less than one third of the trainees are multigrade teachers. The majority of the trainees will not teach multigrade classes after the training. Indeed, they do not need to learn about multigrade teaching for a moment.

Table 3 Number of Multigrade Teachers

districts	multigrade	monograde	total
Nuwakot	18	55	73
Kavre	14	17	31
total	32	72	104

7. PROCESS OF THE TRAINING

When comparing the three different levels of the training, we can observe an important change in the structure of the training between MTOT/DTOT and RCT levels in terms of duration, aims, coverage of the training material, and physical conditions at each level.

The duration of each training programme differs. The duration of MTOT is 1.5 days, DTOT takes 4 days and RCT 10 days. The whole training material is to be covered in ten days, but only 1.5 days are available for MTOT. Therefore, the MTOT trainer restructured the 10-day training material, and compressed the training contents from 10 to 1.5 days. In other words, he produced a miniature version of the 10-day training. His aim of MTOT was to highlight significant points in the training material. Since the MTOT trainer shortened the 10-day training to 1.5 day, the coverage of contents was limited so that he selected seven topics which he thought the most significant for multigrade teaching. Time division and SLA were considered especially important by him. Thus a great deal of time was spent with those topics.

DTOT trainers followed a programme with the same characteristics, duplicating the structure of MTOT and just extending it from 1.5 to 4 days. They covered the same topics in the same order as MTOT, extending the length of training by 2.5 days. Two topics were added to the training contents of MTOT to fill 4 days. The topics added during the additional 2.5 days were selected from non-multigrade teaching–related topics which were familiar to the non-multigrade experienced trainers.

The structure of RCT on the other hand was completely different from the upper levels. Unlike MTOT/DTOT trainers, RCT trainers needed to cover all topics of the 10-day training material, but not only selected topics. Their aim was to finish a whole training material in ten days. Thus RCT trainers covered most of the training material.

Physical conditions also changed between MTOT/DTOT on the one hand and RCT on the other hand. There were large tables for group work during MTOT, making it possible to follow the instructions of the training material. The same kind of furniture was used for DTOT. For RCT however there were only tiny rooms with inappropriate furniture which made it difficult for RCT to follow the examples of the upper levels.

8. OUTPUTS OF TRAINING

Knowledge Transfer by the Trainers

In the questionnaires, the trainees were asked before the training how they currently conducted multigrade teaching. After the training, in the evaluation forms, they were asked again how they would conduct multigrade teaching from then on.

There was a difference in the answers between the two surveys, regarding to the components of the training material. The number of trainees citing the time division of class management into teacher's teaching time (T class) and self study class (AMT class) among a lesson period was increased from 13 to 24, and providing self leaning activities (SLA) during teacher's absence was increased from 27 to 37, and appointing student monitors more often increased from 17 to 64. Other components obtained less attention from the trainees. The results from the evaluation forms indicated that at least three components of knowledge on multigrade teaching provided by training were acquired or recalled by a number of the trainees.

Competency Gained by the Trainees

The trainers and the trainees practically conducted multigrade teaching during the training. It indicated which components of the training material were adopted in their practice teaching and how the intended ideal model of multigrade teaching was cascaded down from the model of the training material to the model of RCT trainers.

During MTOT, trainee 1 (RCT trainer A) managed to duplicate the model lesson of the MTOT trainer, but others failed in duplicating it and missed some concepts. All of the trainees provided SLA and appointed a monitor in their practice teaching.

DTOT produced results similar to MTOT. However the quality of duplication by the trainer of the model lesson in the teaching

material decreased. Group work had totally disappeared in DTOT. Three out of five trainees did not follow the class division of Teacher's and monitor's class system. Although the message became distorted, there was still some transfer achieved, especially the notion of responsibility for two grades during one lesson period. All the trainees divided their class into teacher's direct teaching and a monitor's class (T and AMT classes) providing SLA, and most of the trainees appointed a monitor.

Performance at Classroom

Since, for this study, visiting the classrooms of all 108 trainees was not feasible, five multigrade teacher-trainees were selected. Two trainees introduced the training components more visibly at their classrooms than others, but four out of five introduced at least one out of T and AMT class division, appointing a monitor and providing SLA.

Trainee A visibly changed her technique of multigrade teaching. Before the training, she did not identify her multigrade classes as multigrade. She taught two or more classes sequentially. After the training however, she identified the multigrade classes and differentiated direct teaching and self study classes (T and AMT classes). She provided SLA and appointed a monitor, providing instructions and answer keys to him.

Trainee B did not adopt most of the techniques for multigrade teaching introduced by the training. However, the training influenced him in terms of his feeling of responsibility for two grades. Before the training, he just divided the lesson period into two parts and taught social studies to two grades in turn. While he taught one grade, he did not pay attention to the other grade and did not provide SLA for it. After the training, before starting teaching for the first grade, he provided SLA for the other grade. When he finished teaching the first grade, he checked on the SLA of the other grade before starting teaching for it.

Generally speaking, Trainee C he did not adopt most of the techniques for multigrade teaching introduced by the training course. However in three lessons after the training he appointed a monitor.

After the training, Trainee D organised his multigrade classes as teacher's direct teaching and monitor's classes, with appointment of a monitor in practice teaching and also in one lesson after the training, although he did not give clear instructions or answer keys to the monitor.

There was no single style of multigrade teaching which could be identified for Trainee E. Even after the training, she did not organise in the division of her multigrade class as introduced by the training. Moreover she did not use multigrade teaching, but pseudo-monograde teaching. It was difficult to identify multigrade classes in her school.

According to the focus group discussion by all of RCT trainers, especially *class division, providing SLA* and *the monitor appointment* did improve. After the training, the teachers organised multigrade groups as T and AMT classes, systematically gave instructions to the monitor and assigned more SLA. The training components mentioned by the trainers confirmed the results from the class observations after the training.

9. CONCLUSION

Multigrade Teaching Training certainly stimulated the trainees. Although the training curriculum was not new to some trainees, they still acquired new knowledge, and others recalled existing knowledge through the training. After the training, more trainees concerned about *SLA, monitors and T and AMT classes* as skills gained by the training. Most trainees were able to apply them in the practice teaching sessions during the training. Four out of five trainee-teachers included them in their classroom practice. All of RCT trainers in the two districts confirmed these results.

Although the training messages were slightly distorted, three key concepts survived throughout the cascade from the central to the school levels. Even though only three concepts reached till the end, the expansion of the messages from only 6 master trainers to all of primary teachers in the nation (91,878 teachers in 1998) [10] during six months is very impressive, compared with 4,317 teachers during six years between 1992 and 1997 before the cascade system was adopted. Thus we can see the cascade system can be very effective. We can assume that this is because of the cascade model which can deliver the training components fast, massively and cost-effectively.

On the other hand, we can see its inefficiency because only three concepts survived among 18 components. However, this is probably not because of its nature but of the quality of the management. Examining training inputs and process, we can find gaps in several aspects between MTOT/DTOT and RCT levels. The messages came down from the top can hardly go through these gaps. If these gaps are minimised and the smooth stream of the cascade is assured, the quality of its function will be improved and its efficiency can be increased.

Thus training designers must carefully develop training materials targeting the specific contents consistently and coherently with indication of the clear ideal models and goals, based on the needs of real classrooms. In order to create smooth flow of the cascade, the path between layers must be cleared without any gaps in the training providers and training environment. The targeted trainees must be selected carefully, instead of calling for every teacher including those who may not need the training. If the training achieves these conditions, the cascading path will be cleared without any obstacles to prevent messages from smooth flowing down. Then the cascade model can be a great potential tool to make the classroom practice change.

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