Nepalese Journal of

EDUCATIONAL ASSESSMENT

NEJEA
ERO

Volume 3 • Issue 1
2021 January

Government of Nepal
Ministry of Education, Science and Technology
Education Review Office
Sanothimi, Bhaktapur
Nepal

ISSN: 2467-9488

Nepalese Journal of Educational Assessment

A Publication of the Education Review Office, Sanothimi, Bhaktapur

NEJEA/ERO

Volume 3 • Issue 1
2021 January

Government of Nepal
Ministry of Education, Science and Technology
Education Review Office
Sanothimi, Bhaktapur
Nepal

Year of Publication
January 2021 (Magh, 2077 BS)

Nepalese Journal of Educational Assessment, 2021, Volume 3, Issue 1

Printed at: Dharma Printing Press, Kathmandu

ISSN: 2467-9488

Education Review Office
Sanothimi, Bhaktapur, Nepal
Phone: +977-1-6631288, +977-1-6634362
Email: eronasa@gmail.com, Website: www.ero.gov.np

NEJEA ERO

Nepalese Journal of Educational Assessment

Volume 3, Issue 1, January 2021

EDITORIAL

Being an essential part of any educational system, assessment deserves much importance in educational discourse as well as practice. Nepalese education should not be the exception to this; and this need had to be understood by the government as well as the academia long ago. The initiation towards publishing *Nepalese Journal of Educational Assessment* was an indispensable attempt, which was concretized in 2016 with the efforts of Education Review Office, Sanothimi Bhaktapur. The initiation was made with a view to disseminate the knowledge and technology developed in the field of educational assessment. Publication of several papers in this journal since then are to be considered with high importance in this regard.

This journal has the scope to accommodate ideas in various themes related to assessment in education. The papers in this journal are highly relevant towards building knowledge in educational assessment, whereby various theoretical insights and practices of assessment come to the fore for academic discourse. With a view to foster creativity and innovation, authors have been encouraged to develop original thoughts in their respective themes of inquiry – whereby they are producing thoughts and ideas that are not necessarily the official opinions of the ERO authority or the editorial board of this journal, or the Ministry. But they definitely educate the concerned policy makers, researchers and educational research institutions like ERO.

This volume has been the outcome of deep level study and empirical inquiry undertaken by the authors who contributed papers in it. One of the strong arguments associated with assessment and evaluation has been the concern that stresses the relation between assessment and teaching-learning. This issue has been covered with importance in this volume whereby the authors have rationalized the need for using the information sought from student assessment for the purpose of their learning enhancement. Regarding the dispute on whether testing and assessment should be considered in isolation or as part of teaching-learning, these papers have emphasized that the feedback from assessment should, essentially, be utilized for enhancement of teaching-learning. Some other issues and concerns covered hereby include the discussions on complexity of test items and students' performance in language testing, assessment methods in relation to teaching strategies in the context of mathematics teaching, and assessment methodology in relation to technology-mediated education. Readers are expected to be benefitted by the scholarly and intellectual efforts made by the authors as reflected in this platform through these writings.

Editorial Board

Nepalese Journal of Educational Assessment

• Volume 3 • Issue 1 • 2021 January

Table of Content

Reflecting Stakeholders' Experiences with Classroom Assessment Practice in the Complex Contexts of School System in Nepal

✍ Karna Bahadur Chongbang

Lecturer, Mahendra Ratna Campus, Tahachal

Abstract

Relying on the context of wide range and levels of assessment policy and practice, through penetrating testing and assessment issues, this article concentrates on how the stakeholders experience classroom assessments, and why it is necessary to think about an assessment framework alternative to CAS in the context of Nepal. The lived experiences elicited from the local stakeholders using in-depth interview within the frame of phenomenological ethnographic approach have been interpreted in the article. In the context of prevailing CAS policy, the stakeholding role and experiences of the local stakeholders regarding school assessment have been discussed in the paper. Despite the importance of continuous assessment, the reasons of preferring test and examination dominantly in classroom practice have been presented explicitly. The paper also hints at an innovative approach to assessment based on collaboration of stakeholders for formulating assessment policy using teachers' expertise and professional disposition.

Key terms: classroom assessment, continuous assessment, test, examination

Context

Assessment is a part of instructional activity. The assessments being practiced in Nepal are of three categories: national assessment, public examination, and school-based assessment (ADB, 2017; Poudel, 2016). National Assessment of Student Achievement (NASA) is an assessment programme being practiced in Nepal at national level for policy feedback. Public examinations are the student certification programmes which are carried out externally at the end of Grade 8, Grade 10, and Grade 12 by the offices of examination placed for different levels. The school-based assessment (SBA), which is being practiced at micro level, is regarded as important one.

Classroom assessment (CA) is micro level assessment which is concerned with classroom instructional decisions. Russell and Airasian (2012, p. 3) stress, "classroom assessment is the process of collecting, synthesizing, and interpreting information to aid in classroom decision making". This approach to educational assessment encourages and empowers the local stakeholders. Grima (2003) argued that the rise of school-based assessment; like internal assessment, coursework

or continuous assessment; is the result of the changes postulated by Gipps (1999) as paradigm shift from testing, examination, and measurement approach to assessment approach; and from centralized to school and classroom based; from decontexualized to contextualized; from group test to individual; from norm-based to criterion-based; and from culture-free to culture relative approach to testing.

Continuous assessment system (CAS) is a concrete initiative of SBA, which has been widely practiced in the basic school system of Nepal. It is being implemented from two decades ago, after piloting it under BPEP II (CDC, 2007; CERID, 2004; DANIDA, 2004). CA, being discussed in this paper, concerns wider perspective than the CAS which is context relative school-based classroom assessment. In this sense, the purposes of CA include diagnosing individual and group needs of students; selection, placement, and grouping students for instructional purposes; controlling and motivating students; communicating achievement and other expectations; evaluating instructional procedures; and providing the opportunity of test-taking experience (Stiggins, 1988). Authenticity of CA relies on the recognition of stakeholders in which teachers are regarded as key actors. Assessment is an integral process of classroom instruction.

In this policy-practice context, I argue that the meaning of classroom assessment is situated in the everyday classroom activities. It is revealed in the lived experiences of the key stakeholders at local level where policy is translated into practice. The policies and contexts are bridged by the stakeholders whose everyday activities are related to instruction and assessment practice in the locally situated school context. Reality of classroom assessment is shaped by a situated complex interaction at the local level where the policy document is activated.

Aligning classroom assessment with theories

In seeking a holistic meaning of the problem, three theoretical lenses are preferred in this research article. The understanding of classroom assessment is crystallized with these lenses. Hence, these important theories are introduced here briefly.

1. Ecological theory: Ecological theoretical perspective intends to describe the integration of the spheres of human activities. Bronfenbrenner (1979) argues that psycho-socio-ecological phenomena exist in interacting relation within the distal (macro level) setting, i.e. national policy and assessment and proximal (micro level) setting, i.e. school system and assessment. CA/ CAS is the practice within a school policy and culture which also connects with macro practice, policy and culture. Cowie and Khoo (2018) also emphasize that adopting an ecological approach to how teacher classroom practices are shaped by the school, community, and wider policy context (Cowie and Khoo, 2018). An ecological orientation offers a productive insight into the

contextual dynamics of assessment for learning. In classroom practice, there is connection to the wider community which has long-term value for developing student independence and learning outcomes (Cowie and Khoo, 2018). The student, as a developing person, interacts with human ecological settings of micro-, meso-, exo-, and macro-systemic level directly and indirectly, and immediately and remotely (Bronfenbrenner, 1979). Bronfenbrenner further argues that activities, roles and relations of human are the basic elements of micro-system or setting which change according to the settings, connections and interactions with other settings or systems flowing information through communication systems. This theory implies that classroom assessment is at micro-system which is influenced by other ecological systems from outside.

2. Instructional design theory: CAs are the tools which teachers use to determine whether the ways of instruction are appropriate and whether their instructional objectives have been met (Stiggins, 1988). Stiggins relates assessment with students' learning. He argues that assessments *of* learning provide evidence of achievement for public reporting, then assessments *for* learning serve to help students learn more (Stiggins, 2002). Assessment *for* learning is far more than testing more frequently for providing teachers with evidence so that they can revise instruction. When teachers assess for learning, they use the classroom assessment process and continuous flow of information about student achievement that becomes useful to advance, not merely check on, student learning (Stiggins, 2002, p. 761). Hence, assessment is a continuous part of classroom life (Russell and Airasian, 2012); and it has to focus the assessment *for* learning rather than assessment *of* learning in the classroom context.

3. Complexity theory: Complexity theory invites new lens to see the school and classroom system which ignores the traditional linear system. It gives the idea of complex adaptive system which consists of the interaction of multiple variables in classroom process (Burns and Knox, 2011). School-based classroom assessment is in a tension of the complex system of uniformity and diversity, formal and informal, external and internal, psychometric testing and educational assessment, national and school-based, group and individual focused assessment (Gipps, 1999). Classroom accommodates academic, social, or personal student characteristics (Stiggins, Conklin, and Bridgeford, 1986) which reveal classroom assessment as a multidimensional phenomenon inviting diverse understanding and viewpoints.

In sum, these three theories have relevance to the problem. The instructional design theory hints to see the classroom assessment from the perspective of enhancing learning. The ecological theory suggests us to understand classroom assessment as an integral systemic process of other broader systems. And, complexity theory implies not to see the classroom assessment as a simple, linear and isolated activity; rather it is a complex problem that interacts with multiple factors. In a

conclusive statement, assessment in an instructional design is influenced by ecological aspects like curriculum plan and national policy system; and again, the enactment of assessment belonging to the instructional design takes place in a complex manner of human and system interaction.

Rationale for the research

CAS is the classroom assessment framed at national policy context. CAS as student assessment that was "proved ineffective" (CDC, 2007, p. 26) has been subjected at national level curriculum policy document, the NCF, that narrates the macro policy context. Observation from the policy perspective indicates that:

student assessment system has not been developed as an integral part of teaching learning activities nor has it been tied up with student's intellectual level, interest, pace, and needs. Systematic programmes of assessing student, teacher, school and curriculum have not been implemented so far for the overall development of education. (CDC, 2007, pp. 27-28).

The policy had re-emphasized the implementation of CAS more effectively in the school contexts. It has been expected in the assessment policy that student assessment would be transformed into CAS; and feedback would be obtained from CAS to formulate and implement educational plans and make learners competent enough to be adapted in society (CDC, 2007). Another end to this policy commitment is enactment at school classroom, which occurs in micro context with complexity. In this context, the research paper concerns revealing the practice context through reflection on the lived experiences of the stakeholders on enacted classroom assessment, while it is foreseen as "quite challenging" (CDC, 2007, p. 27) from the policy assumption. This directly implies for assessment policy formulation, revision and/or transformation.

Research purpose and question

The purpose of this research paper is to work out a functional framework of classroom assessment reflecting critically on the lived experience of stakeholders to practice in the complex school contexts at micro level. The research purpose is met by answering a concrete research question. Hence, this research paper tends to explore evidences to answer the questions, which include: "How do the stakeholders of different school contexts, interacting with the macro systems, experience classroom assessments including CAS? Why is it necessary to think about an assessment framework alternative to CAS and existing practice?

Research methods

This research has used the information collected from schools as primary data and also the literatures related to student assessment. The research design for collection of the primary data is based on

multiple case studies. For this purpose, four schools were selected as cases purposefully. For this research, student, teacher, head teacher, parents were selected as research participants from four school cases. Using phenomenological ethnographic approach, which helps us to understand the experience (Gabay, 2016), the participants' lived experience on classroom assessment have been collected using in-depth interview in informal settings being researcher as a human instrument. The collected qualitative data have been transcribed, thematically organized and interpreted.

Findings

The information or lived experience collected from the research participants was inductively analyzed generating the themes from transcription of the interview data. Each theme is a lead voice representing lived experience of the research participants. Under the theme the experiential expressions of research participants have been triangulated and then crystallized (Richardson, 2000) to draw meaning. The research findings are derived from the process of grounded meaning making in the school contexts and based on stakeholders' value. Therefore, the paper, based on the primary research, intends to portray the lived experience, perceived understanding and reflection of stakeholders on CA including CAS.

Teacher: I just heard CAS

This is a saying expressed by two teachers at basic level education from school-D who first time heard the abbreviated word CAS during the interview process. This unexpected expression approaching to hear led the course of interaction immersing into the bottom of the reality situated in the school context. On the way of interaction, a teacher transferred from a school of Dholakha district said, "I have idea about CAS, I participated in CAS training when I was in the school of Dolakha. But I found no practice of it in this school." Head teacher, who is regarded as a leader "for setting strategic vision for the school, and establishing a culture wherein change and innovation are accepted by staff as necessary to ensure the continued improvement of student outcomes in the school" (Penlington, Kington, and Day, 2008, p. 66), had shared the situation of CAS practice. As sharing, she said, "We have not implemented CAS on regular basis, but we fill up the CAS form. Teachers think CAS work as secondary task."

Among the students who participated in the interaction, one from Grade-9, who is first girl, shared her experience saying, "Tests and exams are periodically conducted. They are: unit test at the end of a unit of teaching; terminal exam every three months; and final exam at the end of the academic session." She is not informed about CAS in her student life in the school. Though parents were committed and supportive to the school, they were found not being informed about the implementation of CAS. In the policy context, it has ensured that participation of the stakeholders

in policy formulation and implementation at local level for CAS is an explicit provision (CDC, 2007). Students as well as parents argued that parents are invited at the time of result distribution in the terminal exams, and students are given feedback in front of their parents.

Head teacher: CAS is good in policy, failure in implementation

The lead quote represents the lived experience and conclusive observation shared by head teacher of case school-A during an interview process. The head teacher of the school which had historically glorious past shared his experience saying, "The intention of CAS policy is very appreciative, but we are failure in its implementation, no portfolios of students maintained". Similarly, one of the teachers opined: "It seems irrelevant in our school context of the miserable life of students suffering from a deeply rooted socio-economic poverty which causes absenteeism and passivity of students." The head teacher and teachers of the school expressed their experience in these words: "We give feedback to the students during classroom teaching, in the time of homework checking and after the result of terminal exams". As stated by head teacher, teachers, parents and students; question-answer in class, homework, class work, terminal exams are the obvious measures of classroom assessment. In sharing experience, the head teacher from the school, who had got the role of trainer for a demand-based teacher training at District level, said, "In the demand-based approach, a huge number of demands of the teachers are collected and the training package is developed which was found not covering all the problems." He further insisted, "It is one of the causes of the teachers being deprived of acquiring the skill to be capable of handling the CAS format." Hence, in the lived experiences of teacher and head teacher of this school, CAS is good but it is not practicable, since the devised CAS policy is distal from the teachers and students' context. But school-based assessments are in the practice.

As felt by the stakeholders in this school, the diversity and chaotic complexity in figuring out moral purpose, getting committed to it and making progress in achieving the purpose (Fullan, 1999) has been enormously difficult. Fragmented collaboration of inside, inside-out, outside, and outside-in (Fullan, 1999) is responsible for a weak performance of this school. Head teacher shared his lived experience saying, "The political tendency rather than professional development of teachers is a big hurdle at present." Similarly, the PTA Chair of the school perceived a fragmented collaboration in the school relying on political alignments.

Parent: I don't know when the exams take place at school

The lead expression is shared by a parent of school-B in the interview. The parent from Muslim ethnic community living with Maithili language and hardly communicating in Nepali language had a daughter who could not communicate in Nepali language and had repeated same class as

a failed student in Grade 9. The parent was found quite dissatisfied with the school assessment process. As the parent shared lived perception: "In our time, teachers used to ask us to read out what was written and done as homework and class work in exercise copies by ourselves, then they started to check the written works. But nowadays, I don't find teachers working in such a way." He said this referring to his daughter studying in Grade 9 who could not read word and sentence properly from her exercise copy copied from the board written by teacher in classroom. It indicates that the stakeholders in the school and classroom context have not experienced the impact of national assessment policy devised in NCF. The policy context demands that school system and teachers have to contact with guardians continuously to discuss about students' progress and for formative teaching. A parent whose son studies in Grade10 shared his experience concerning the role of school and teachers in this way: "Teachers never call us to discuss whether students come to school or not, present in class or not, study at home or not, etc. My son studies in class 10 but he can't even write 'd' properly." The teachers of the school claimed that the weak socio-economic background of parents' is the most responsible factor of this distal relation. Realizing the weak relation and its impact on students' learning, teachers shared their experience in this way: "The parents of this school don't have time to visit school and get information about their children. They don't come to school, even if they are called." Hence, the stakeholders of assessment in this school have experienced that the terminal exams are conducted but CAS is not in practice.

Regarding CAS, the head teacher of this school said, "It was in practice three years back, now I'm going to bring the CAS register to maintain", which shows that CAS has not been prioritized for classroom assessment in practice. Similarly, a teacher shared, "It has been nearly one year of my teaching at this school as lower secondary level teacher for Nepali subject. I have not seen filling up the CAS register and I'm also not maintaining it." Critically reflecting on the malpractice of CAS, the head teacher of this school realized to continue it again, which was discontinued in the tenure of former head teacher, and instruct the teachers to maintain student portfolios and CAS registration regularly. As the research participants expressed, school-based classroom assessment involves only first, second and third terminal exams.

Student: Test is conducted every Friday

The lead expression is the shared lived experience of the students expressed in interview entering into the socio-educational culture and system of school-C which is situated in the heart of urban city in Terai. In the process of information generation, students shared their perceptions with the researcher saying, "Class test is conducted every Friday in our school". The expression led me to understand the parents' experience. One of the parents shared, "School conducts test every Friday and distributes results on Sunday". Further he said, "But I have seen more disadvantages

than advantages of such a way of testing, because students are engaged more for the exam rather than for the study and learning from the lessons." Teachers from the school also shared their experience in these words: "The system of weekly test and terminal exams is followed to assess student achievement". The leadership adopted in this school by the principal seems to be linear strategic approach (Davies and Davies, 2006) to get good message by attaining good learning achievement of students. The principal of this school said, "No, I haven't heard about CAS. We have own policy and system of educational activities. We conduct weekly test (on Friday) and give result on Sunday. Homework, class work and terminal exams are used as the means of assessment. The results are given to the students along with their answer scripts." The principal with strategic leadership has emphasized explicit and rigorous format, structure, and system of the school setting which tends to keep a close monitoring over the activities of teachers and students, and contact with parents. Regarding this, the principal shared his experience in these words: "Parents of the weak and irregular students are called to visit the school. But they rarely come to school. In some cases they do not come to school. In such case, we warn the parents that the child will not continue in the school." He experienced good participation of parents in result distribution.

Discussion: Innovation rather than inviting ideas

The NCF, in general, and subject curriculum, in specific, represents school assessment policy formally which creates a systemic ecology, an imperative and bureaucratic operation in the School System of Nepal. As the NCF; class work, project work, community work, unit test, achievement test, terminal exams, observation, formative and innovative work are the general tools and techniques of CA (CDC, 2007). The policy informs less test-based internal summative assessment and high use of non-testing assessment in the lower classes, which reverses as class increases or reaches secondary level education. Similarly, the policy has also bridged internal assessment and external examination/public examination proportionately along with increase in level. NCF policy has attempted to ensure balanced assessment systems of formative with summative assessment and large-scale with classroom assessments (Stiggins, 2006). However, school-based classroom assessment, which is regarded as internal assessment, has been given more emphasis in the policy. These are the talks taking place in the policy text which is distal from classroom practice, even too distant if holistic-systemic ecology (Cowie and Khoo, 2018) fails in functioning. From the classroom research, it is found that homework, class work, class test and terminal exams are commonly used as instruments of classroom assessment.

It is mentioned in the framework of Primary Education Curriculum that the subject teacher, depending on the standard of student's task, should put 1-3 tick marks for class work/classroom

participation, project work, behavior change, creative works and attendance of every student in every lesson (CDC, 2009). The teacher has to calculate percentage and assign grade (A, B, or C) to denote the student's learning achievement while preparing terminal progress report for each student. In this research, the head teachers and teachers have perceived lack of training as a barrier to carry out CAS in practice. They stressed the point that a comprehensive and practice-based training requires for handling the CAS policy guidelines. It is also found that teachers have not heard about CAS, which signifies very rare or no talk about CAS and its practice in schools. Research findings of Wagle, Luitel, and Krogh (2019) suggests that policy guidelines are not being followed by schools. In this research also, participants have shared similar practice that CAS recording form is used to fill up when the terminal examination reports are prepared.

Research finding of Luitel and Taylor (2005) shows that despite the attempts of introducing various policy reforms in Nepal, the classroom culture has been found unchanged and CAS is also one of such policies introduced by the Government of Nepal since nearly two decades back to reform traditional output testing. This new assessment approach was thought to replace the traditional practice of 'assessment of learning' by 'assessment for learning' approach. But the culture of classroom test and examination is deeply rooted since the school system started in Nepal. For Kleinsasser (1995), such cultural practices are resilient and robust which do not change easily or quickly. The teachers have understood the essence, meaning and purpose of the formative nature of CAS, but failed to implement it in practice. They have taken the CAS forms to complete it as a substitute for setting and marking examinations (Acharya and Shiohata, 2014) like a traditional practice. One evidence univocally expressed by the research participants is invitation to the parents to see the terminal test results of their children, which is a perennial ritual of testing culture (Kleinsasser, 1995). This shows that the teachers and head teachers have not internalized the essence of CAS; and the parents have not felt stakeholding responsibility towards assessment any more.

In the schools of Nepal, it is found that a bureaucratic and hierarchical culture shapes and facilitates the thinking and actions (Luitel and Taylor, 2005) of curriculum policy makers which produces a de-contextual instructional and assessment policy. In practice, it seems there is no sufficient interaction between the macro and micro context, policy and practice, text and context situations. As a result, teachers and head teachers are not motivated to CAS practice, and perceive it as impracticable policy and just a burden to teachers. An approach of holistic-systemic ecology hints that stakeholders and levels of the system influence the teachers, classroom practice and student experience (Wagle et al., 2019). But the research finding of Acharya and Shiohata (2014, p. 9) shows that "district officials blame the government for not establishing a proper mechanism to implement continuous assessment". Similarly, the research participants, head teachers

and teachers shared the experience of no monitoring from concerned authority regarding the implementation CAS. The CAS recording form is just circulated to make it accessible to the schools (Acharya and Shiohata, 2014) which does not favor resolving the problem of teachers in recording and marking the accounts of the students. Hence, for a change and sustainability of change, more intensive interaction at school level, district, state, nation level as well as globally; and such interactions across the levels are expected (Fullan, 1999). In the case of implementation of the CAS, the interaction lapses of the levels in the form of micro, exo, meso, macro, and supra systems within systemic ecology is explicitly found in making a significant impact on classroom practice. Therefore, Cowie and Khoo (2018) argue that classroom, school and school community, and the wider policy contexts are expected to be well interconnected to support assessment for learning.

In the changing socio-politico-educational context of Nepal, irrelevance of basic education from anti-colonial critique, a thesis of Wagle et al. (2019) is hard to ignore in understanding the resistance to the implementation of CAS in the schools. Implicitly, it seems micro-politics of resistance (Thomas and Davies, 2005) in the school contexts is caused by the interactive relation between the macro politico-socio-culture beyond the school and within school and classroom, as this phenomenon is a historically rooted one. A tendency, on the part of many teachers, is found ascribing the problems of responsibility for learning to the lack of resources, laziness of the students, and indifference of parental factors, external to themselves (Acharya and Shiohata, 2014). Parents, who are regarded as major stakeholders of school system, perceive the situation of fragmentation among the teachers and head teacher in school, and have the experience of not getting involved in and informed about school activities. Their dissatisfaction towards teachers' responsibility, way of teaching, and checking the homework and class work stimulates to seek an alternative way to change school context in terms of teaching, assessment, and learning. In such complex context, a moral purpose, which is considered collective and broader in nature reaching beyond individuality (Fullan, 1999), of head teacher and teachers is expected to be a matter of praise for maintaining dynamism. The traditional linear, ordered, and systemic process of policy implementation hardly works in the complexity.

Now what?

The testing culture rooted in the school classroom instructional process cannot be transformed into assessment culture without adopting an innovative approach. CAS policy is good in its assumption but its policy process is top-down, bureaucratic, instrumental, and linear – which ignores the complexity of school context and professional expertise of teachers. So, it reminds to make a revisit in policy, principle, assumption, and text to bring change in practice, culture, and

behavior in school system. It implies the need for an innovative approach to classroom assessment with a new policy perspective that is situated in school context which would emphasize evolving nature of assessment policy and practice in the complexity of school contexts.

Hence, now it is not the time for insisting on the modality of classroom assessment; rather it would be highly relevant to work for innovating school-based classroom assessment with participation of stakeholders at local level creating the broader collaborative culture among parents, teachers and head teacher; and using teachers' experiential knowledge, expertise and professional disposition which empower teachers with their ownership in policy. It ultimately supports students' learning by enhancing the stakeholding spirit of stakeholders.

References

Acharya, Jaya Prasad; and Shiohata, Mariko (2014). Transformation of teacher belief and practice? Enhancing formative teaching and learning in Nepal. *Education for Rural Transformation.* Symposium conducted at Kathmandu.

ADB. (2017). *Innovative strategies for accelerated human resourcedevelopment in South Asia: Student assessment and examination (special focus on Bangladesh, Nepal, and Sri Lanka)*. Retrieved from Manila: http://dx.doi.org/10.22617/TCS179079

Bronfenbrenner, Urie. (1979). *The ecology of human development: Experiments by nature and design*. Cambridge: Harvard University Press.

Burns, Anne; and Knox, John. (2011). Classrooms as complex adaptive systems: A relational model. *Tesl-Ej, 15*(1), pp. 1-25.

CDC. (2007). *National curriculum framework*. Sanothimi, Bakthapur: Author.

CDC. (2009). *Primary education curriculum: Class 4 and 5*. Sanothimi, Bhaktapur: Author.

CERID. (2004). *Effective classroom teaching learning; phase III: School based assessment* (FRP Report 17). Kathmandu: Author

Cowie, Bronwen; and Khoo, Elaine. (2018). An ecological approach to understanding assessment for learning in support of student writing achievement. *Frontiers in Education,* 3(11), pp. 1-13.

DANIDA. (2004). *Evaluation (Nepal, joint government-donor evaluation of basic and primary education programme II)*. Retrieved from http://danida.netboghandel.dk/

Davies, Barbara, and Davies, Brent. (2006). Developing a model for strategic leadership in schools. *Educational Management Administration and Leadership, 34*(1), pp. 121-139.

Fullan, Michael. (1999). *Change forces: The sequel*. Psychology Press.

Gabay, Lee. (2016). *I hope i don't see you tomorrow: A phenomenological ethnography of the passages academy school program*: Brill Sense.

Gipps, Caroline. (1999). Chapter 10: Socio-cultural aspects of assessment. *Review of Research in Education, 24*(1), pp. 355-392.

Grima, Grace. (2003). School-based assessment: Implementation issues and practices. Paper presented at the 21st Annual AEAA Conference: *Assessment and Certification in a Chinaging Educational, Economic and Social Context*. Cape Town, South Africa.

Kleinsasser, Audrey M. (1995). Assessment culture and national testing. *The Clearing House, 68*(4), pp. 205-210.

Luitel, Bal Chandra, and Taylor, Peter Charles. (2005). Overcoming culturally dislocated curricula in a transitional society: An autoethnographic journey towards pragmatic wisdom. Paper presented at Annual Meeting of the American Educational Research Association (AERA) on SIG: Self-Study of Teacher Education Practices, Montreal. Retrieved from http://researchrepository.murdoch.edu.au/id/eprint/38036

Penlington, Clare; Kington, Alison; and Day, Christopher. (2008). Leadership in improving schools: A qualitative perspective. *School Leadership and Management, 28*(1), pp. 65-82.

Poudel, Lekh Nath. (2016). Reviewing the practice of national assessment of student achievement in Nepal. *Nepalese Journal of Educational Assessment, 1(1)*, pp. 1-16.

Russell, Michael, and Airasian, Peter. (2012). *Classroom assessment: Concepts and applications* (7th ed.). New York: McGraw-Hill.

Stiggins, Richard. (1988). Revitalizing classroom assessment: The highest instructional priority. *The Phi Delta Kappan, 69*(5), pp. 363-368.

Stiggins, Richard. (2002). Assessment crisis: The absence of assessment for learning. *Phi Delta Kappan, 83*(10), pp. 758-765.

Stiggins, Richard (2006). Balanced assessment systems: Redefining excellence in assessment. *Educational Testing Service. Portland: Oregon*.

Stiggins, Richard, Conklin, Nancy, and Bridgeford, Nanacy (1986). Classroom assessment: A key to effective education. *Educational Measurement: issues and practice*, 5(2), 5-17

Thomas, Robyn, and Davies, Annette (2005). Theorizing the micro-politics of resistance: New public management and managerial identities in the UK public services. *Organization studies, 26*(5), 683-706.

Wagle, Shree Krishna, Luitel, Bal Chandra, and Krogh, Erling (2019). Irrelevance of Basic School Education in Nepal: An Anti-Colonial Critique on Problems and Prospects. *Dhaulagiri Journal of Sociology and Anthropology, 13*, 31-39.

Assessment for Learning Strategy in Mathematics Instruction: Teachers' Perceptions and Practices

✍ Dr Jaya Bishnu Pradhan

Lecturer, Mahendra Ratna Campus, Tahachal

Abstract

Assessment for learning (AFL) strategy is a kind of assessment to obtain specific information on the progress of student learning on appropriate knowledge, skills, and abilities. This paper explores teachers' perceptions about the use of AFL strategy and its practice in mathematics instruction. An interpretative research paradigm was adopted to find teachers' perception and classroom practice of AFL strategy. It was found that AFL strategy can contribute to improve the teaching and learning of mathematics. This strategy helps students to motivate and develop a positive attitude to learn mathematics. It provides students with an opportunity to get informed about their errors and can improve their level of understanding of contents. However, some teachers are not ready to face the challenges and are tending to enjoy the process which they have been practicing for a long period. Stakeholders should be motivated with commitment and determination to apply AFL strategy while teaching-learning mathematics.

Key terms: Assessment, teaching, learning, assessment for learning, instruction

Introduction

The procedures and techniques of determining students' achievement are understood as assessment. The evidence obtained from different types of tests or examinations are the sources for decision making regarding the effectiveness of classroom instruction. Collier and Lerch (1969) state that assessment is a crucial aspect of educational process and should be considered an integral part of day to day instructional programmes. Further, Lynch (2001) states that assessment is the systematic gathering of information to make decisions or judgments about an individual's performance on the intended curricular objectives. Thus, assessment is an umbrella term that covers a broader area and a number of procedures undertaken to make decisions about individuals or programmes.

Three types of classroom assessment are practiced in most education systems for different purposes. These are: assessment of learning, assessment for learning, and assessment as learning. The first purpose is concerned with the assessment of the level of achievement and providing certification, hence to judge students' performance. The latter two purposes are useful to provide necessary feedback to the teachers and students for improving classroom pedagogy. Thus,

formative assessment (having the latter two purposes just mentioned) is designed to extend and encourage learning and make improvements in classroom practice. It can be used as a synonym to assessment for learning (AFL) which focuses on facilitating students' learning. In this regard, Wiliam (2011) states, "Assessment for learning is any assessment for which the priority in its design and practice is to serve the purpose of promoting the students' learning." In general, AFL is defined as the assessment used to improve classroom instruction.

AFL is done for the explicit purpose of diagnosing where students are in their learning, where the gaps in knowledge and understanding exist, and how to help teachers and students improve student learning (Wiliam, 2011). AFL is applied as a strategy to analyze the existing knowledge of students in particular content and design appropriate instructional pedagogy to achieve curricular objectives. The techniques of AFL include: observation of students' activities, questioning their informal talk, and listening to their responses to find strengths and weaknesses. Homework, class work, unit test, oral test, etc. are the tools of AFL strategy that help to diagnose students' learning deficiencies and support them through constructive feedback.

Mathematics has been considered a difficult subject for students. To overcome the difficulties, assessment system should be adopted as an integral part of everyday mathematics instruction. Teachers' knowledge, perception, and practice about AFL strategies in mathematics classroom are of paramount importance. This paper discusses teachers' perceptions of AFL and their practices. The study aims to answer the following research questions.

- What are the teachers' perceptions towards AFL strategies in mathematics instruction?
- How do teachers practice AFL strategies while teaching mathematics at Basic level?

Studies on AFL

Research Center for Education Innovation and Development (CERID) (2004) conducted a study on assessment practice at primary level – which found that ninety percent schools conducted terminal examinations two or three times in a year which were used mainly for summative purposes. Homework, class work and classroom questions were the main tools used for assessment in classroom teaching-learning – whereby about eighty percent of homework was not sincerely corrected and no feedback was provided. The purpose of classroom questions, class work, and other assessment tools was to evaluate the day's lesson but teachers did not use constructive feedback in classroom. In this way, assessment is found detached from classroom teaching-learning. Very few teachers were found using assessment to diagnose students' learning deficiencies.

Gareis (2007) has presented three core principles of AFL. First, formative assessment and classroom instruction are not separate entities, instead, the first is a part of instruction. In this

regard, he states that formative assessment should help a teacher determine what the students are getting, what they are missing, and what needs to happen next. Second, a formative assessment requires constructive feedback. Feedback is considered synonymous to 'assessment for learning', as constructive feedback promotes student learning. However, such feedback should be honest, precise, and timely (Gareis, 2007). The third principle states that formative assessment fosters students' active participation in the lesson. Studies have shown that the involvement of students in assessment process is crucial to learning. AFL creates such an environment in which students can realize that mistakes are an inevitable part of learning and their mistakes do not affect their final grades. Ozan and Kincal (2018) mentioned that AFL is one of the most important factors in assessing both the teachers' and students' learning processes at all levels of education. Further, formative assessment practices have increased students' academic achievement and aroused positive attitude towards class.

Various studies have found that AFL has the potential power for enhancing students' learning in mathematics. But CERID's study (2004) indicated that most of the Nepalese school teachers do not know the ways of implementing AFL approach in classroom instruction. In this connection, the present study having a focus on the perception of teachers on AFL, and the possibilities and problems that the teachers face in its implementation are of paramount importance.

Framework of the Study

Traditionally, students are assessed after teaching by taking a test or other means of assessment. Such type of assessment is known as an assessment of learning or the summative assessment. Assessment of learning only judge students' level of attainment and does not assist in the teaching-learning process. Curriculum Development Center (CDC) (2007) of Nepal pointed out that the existing assessment system has neither been effective nor acknowledged as an integral part of teaching-learning. The assessment used in Nepalese schools is not contributing to the teaching-learning process (CERID, 2004). The main objective for a teacher to be successful is to be able to attain curricular objectives and enrich the students with intended knowledge. Achievement gains can be made only if teachers engage their students in a continual learning process. In order to create a positive and flourishing classroom environment for our students, AFL can be employed as a strategy which would enhance student achievement (Chappuis and Stiggins, 2002).

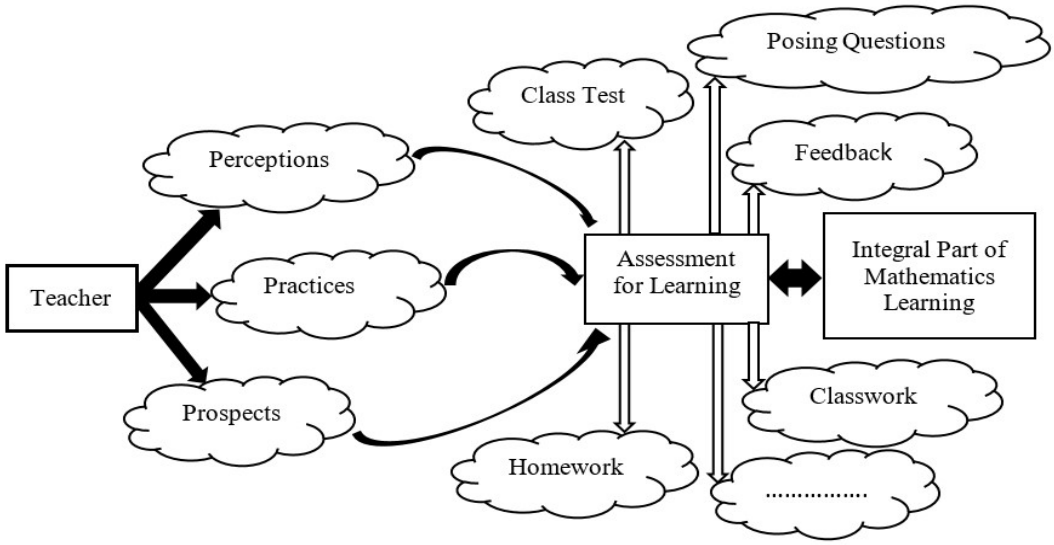


Figure 1: *Mathematics Learning through AFL Strategies*

Classroom assessments are expected to be integrated with the instructional process for mathematics teachers to strengthen pupils' learning. Shepard (2000), in this regard, views that AFL includes the kind of assessment that can be used as part of the instruction to support and enhance learning. As teacher is the main component of classroom instruction, my framework in this study assumes that effective implementation of AFL in classroom instruction would enhance students' level of understanding. The teacher should know about different components of AFL strategy and their impact on teaching-learning process. In this regard, Education Review Office (ERO) (2016) mentioned that the students who were assigned homework for assessment achieved better results than those who were not assigned to do it. Thus, the class work, homework, class test, terminal examinations, and engagement of students by posing questions are some of the components of AFL strategy that can be used as the integral part of classroom instruction to enhance students' learning. The teacher should have knowledge about the level of achievement obtained by the students and should diagnose gaps to attain the targeted objectives. By assessing through various AFL tools, teachers have to provide immediate and constructive feedback to students. I believe that teachers' perception, knowledge and commitment to use AFL can motivate them to successively implement it in classroom instruction. Teacher's perception, knowledge and commitment for the implementation of AFL play an important role in the effective use of it in mathematics instruction.

Methods and Procedures

I adopted interpretative paradigm to conduct this study – which assumes a relativist ontology, a

subjective epistemology, and a naturalistic set of methodological procedures (Denzin and Lincoln, 2005). An interpretive research paradigm is highly relevant for this study, as it is seeking reality on teachers' perceptions and practices of AFL strategy in mathematics. The knowledge to be gained about teachers has been developed from teachers' experience and their interpretations as well as the interpretation of the researcher. Therefore, this study intends to focus on the perception, experience, and practice of the individual mathematics teacher about AFL strategy in mathematics in their day-to-day working environment. This interpretive research was conducted to probe into the everyday experience of implementation of AFL strategies in mathematics classroom.

Since this study was framed to explore how mathematics teacher makes sense of their perception, understanding, and experience about AFL, I purposively selected six mathematics teachers teaching at basic level from a public school of Kathmandu. The data collection instruments and procedure were explained to them; then individual consent was obtained from six participants included in the study. The data regarding the teachers' perceptions and practice of AFL strategies were collected through interviews with teacher participants and observations (CERID, 2004). This was done with the help of interview guidelines and observation checklist. All the possible conservations were carefully recorded with the help of the video camera; and field notes were also taken. Data were collected from multiple sources. I reviewed all the data gathered from the multiple sources (Creswell, 2009; Pradhan, 2020) and then organized them into categories or themes. In this process, I tried to produce accurate descriptions of the contents. Interpretation involved attaching meaning and significance to the analysis, explaining descriptive patterns, and looking for relationships and linkages among descriptive dimensions. In my study, teachers' perceptions and practices of AFL in mathematics classrooms were analyzed. The analysis of the data was validated by triangulating the statements among the research participants, their ways of presenting the text in several times of data collection period.

Findings and Discussion

This section deals with the findings of the study in terms of data gathered from the field. During the analysis of field data, two vital questions, as mentioned in the research question section, were answered; and findings of study were derived accordingly, as discussed in the sub-headings that follow.

5.1 Perceptions of teachers on the use of AFL strategy

This sub-section presents the answer to the first research question that was asked to six mathematics teachers. They were asked to describe what they had understood about AFL strategies in mathematics instruction and thereby increase students' achievement. In this regard, the first

teacher (T1) responded:

> *It is not easy to use AFL strategies due to large number of students in the class. Generally, I pose a few problems in my classroom teaching. This draws the students' attention and allows them to discuss the problem in their group. I give them sufficient time to discuss their findings and I encourage them to justify their answers. This helps me to understand the learners' abilities and assists me when teaching that topic.*

This narration demonstrated that she created a stimulating environment in classroom instruction. This teacher used to diagnose students' weaknesses and find gaps by posing questions, which would in turn help students to attain the intended curricular goals. Furthermore, she demonstrated that she is extremely aware of the importance of a collaborative study among students. It is believed that the use of outcomes of different AFL tools like posing questions during classroom teaching and immediate constructive feedback enhances classroom instruction. The feedback provided must not be ego-centric. This would encourage progressive learning and students' active participation in the learning process. Regarding teacher knowledge on the use of AFL strategies in mathematics classroom, T2 response:

> *I'm using several assessment tools in mathematics teaching. You know, mathematics can be understood by doing the diverse problems given in the text, I give homework to my students. Sometimes I give them classwork too and sometimes I ask them to do on the board. All these different assessment tools help me to examine students' level in the subject and give necessary feedback to improve their learning in mathematics.*

This response shows that the teacher knew various AFL tools and their importance. Proper use of assessment tools helps him to obtain specific information on the progress of students' learning. In the same theme, I asked all of my teacher participants; and I found that four of them expressed similar views about the knowledge of AFL and its uses. However, the use of different assessment tools during classroom teaching is not the actual AFL procedure until they help to improve teaching and learning. Formative assessment must bring positive changes in the students' attitude towards mathematics. This would probably enhance the conceptual understanding and hence, raise the level of students' achievement. In this regard, T4 expressed:

> *I understand that motivation is an effective means to encourage students to learn mathematics. After posing questions to the group of students, I give some time to think and respond. I give immediate feedback to students. I write the comments in their homework and classwork copy. I believe, the beautiful words and compliments can be powerful rewards that effectively encourage students to do better. Sometimes I identify*

> *similar problems of students and give them feedback in group. However, it is quite hard to manage all these kinds of stuff every time in our tight teaching schedule. Sometimes, the workload becomes hard to bear; and it does not let me assess as per my motive.*

As the teacher stated, all elements of AFL were useful, and its implementation significantly increased students' learning. Ozan and Kincal (2018) also mentioned that formative assessment practices positively influenced students' attitude towards mathematics and increased their achievement. Similar argument is given by Mitchell and Koshy (1993) who state that meaningful feedback is part of the learning process. On the other hand, Black (1993) reveals that assessment should provide short feedback so that obstacles can be identified and tackled. Moreover, in this study T6 gave oral feedback to the learners when something went wrong. The perception of T3 and T5 differs from other teachers because they indicated that although they used different types of assessment, they do not use all sorts of assessment with 'formative' motive. In this regard, T3 speaks:

> *I know the use of various strategies of formative assessment. I always give homework and sometimes classwork to the students. But I cannot use these assessment tools to diagnose students' deficiencies in the content. It is because of the large number of students in a class and heavy teaching loads as we have to take many periods all day.*

One of the problems to use AFL strategies in the classroom is the distribution of the ratio of teachers and students in a class. CERID's study (2004) also mentioned the overcrowded class was one of the hindrances to implement AFL in the classroom. Further, CERID (ibid.) also indicated that more than eighty percent of sample school teachers did not correct homework sincerely and did not give any constructive feedback. Mere use of several assessment tools in classroom instruction is not actually an AFL strategy. These tools must help children to improve their learning without any stress and fear. In the same vein, T5 makes similar argument regarding the knowledge of AFL strategies:

> *In classroom teaching of mathematics, I am taking different tests like unit tests, monthly, and terminal exams. Besides exams, I also give homework and classwork to students. All these assessment tools are being used to keep the records of each student for the purpose of making the decision of students' achievement for their overall grades.*

The narration of T3 as well as T5 revealed that it was not easy to practice all the principles of formative assessment in their contexts. A large number of students in each class makes it difficult to pay special attention to each student individually. It is hard to attend each student's problems, give constructive feedback to each student, and talk with them on individual basis. In order to

implement AFL effectively and make it possible to use a variety of assessment tools for formative purposes, it is also necessary to mitigate teacher's burden of teaching hours and adjust the number of students in a class (CERID, 2004). Furthermore, they are aware of other types of assessment tools that they could use to help students; but were unable to use them for formative purpose. In view of the above narration, the findings showed that T3 and T5 used the various assessments to keep records rather than for formative purposes or to help the students improve their mathematics learning. They revealed that they use worksheets, exercises, classwork, homework, and terminal examinations so as to keep records for the final grade. In this regard, Ministry of Education (MOE) (2016) realized that formative assessment is being used by very few teachers to systematically guide, improve, and adapt their teaching. It is true that the implementation of formative assessment by teachers has not been brought into appropriate action in their classroom practices. From the interview of my research participants, it was found that formative assessment tools practiced by teachers in the classroom were mainly used for summative purposes.

5.2 Practice of AFL strategies in mathematics instruction

The second objective of this study was to examine the teachers' classroom practice on the use of AFL strategies in mathematics instruction. I selected only two teachers (T1 and T5) for class observation, as they understood the strategies of assessment for learning and the purpose of following this approach differently. Another reason for the selection of these two teachers was that both had taught in the same grade. Classroom activities of teachers were observed during their lesson presentation; and class work copies from learners were analyzed to see how the teacher gave feedback.

Lesson observation of T_1: I decided to observe the class about prime and composite numbers in grade five. For this, I had to observe the class by T_1. She had developed a lesson note for teaching prime numbers as per constructivist teaching framework. I asked T_1 for observation of her class and got permission. The teacher briefly introduced me to the students and told them the purpose of my visit. The formal class began.

I observed the class of T_1: Prime and Composite Number. She had divided the students into five small interactive groups of 7-8 members. She provided each group with a geoboard and rubber bands of different colours. Each group was assigned two numbers, one prime and other non-prime (composite). For instance, the numbers 5 and 6 were given to group A, the numbers 7 and 8 to group B, and so on. Each group was asked to form a possible rectangular plot with the help of rubber bands in the geoboard. They were asked to stretch the rubber in the geoboard to form a rectangle indicating the assigned numbers of area (before, 5 sq. units; then, 6 sq. units respectively) as many as possible. After a few minutes of discussion within the group, she asked

each group to share their answer. She questioned how many possible rectangles did they get (for the number 5 and 6) and what were the size of rectangles they could prepare. Group A replied that they could prepare 1×5 and 5×1 in case of 5 and 1×6, 2×3, 3×2, and 6×1 in case of 6.

Then, T1 enlisted some numbers which could possibly have only 2 rectangular plots on the board which was assisted by her students. Then she asked if there were other numbers that could have similar results. And she concluded that these numbers could be called prime numbers and the numbers that can have more than 2 rectangular plots can be called composite numbers. Then she asked her students if they could write the definition of prime numbers and composite numbers. Then comprising the answers from her students, she modified it and wrote it as "a prime number is a natural number that is greater than 1 and has only two factors i.e. 1 and itself". Then she gave some examples to check whether the numbers were prime or composite (Pradhan, 2019a).

The area can be visualized as the small square unit in the geoboard. She used the area of the rectangle to conceptualize prime and composite numbers. The area is one of the common metaphors that can help to conceptualize prime numbers and composite numbers (Pradhan, 2019b). It is one of the common visual instructional materials for the teaching and learning of mathematical concepts, and is equally important in teaching prime and composite numbers. Learners used different representations for the problems. It was interesting to observe that all learners were engaged in discussion in their groups. It was observed that T_1 provided the students with the best opportunity to learn in a collaborative and constructive way.

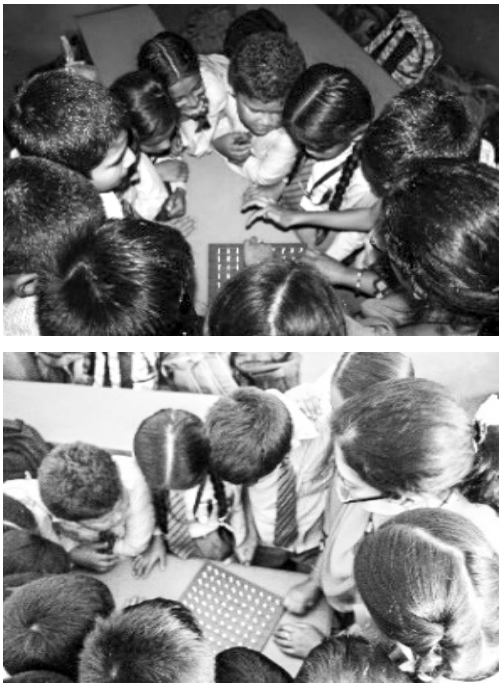


Figure 2: Students engaged in the classroom

Next day, the teacher entered the class and asked learners to settle down. She asked oral questions about the activity they performed the previous day. After a short revision, she asked them to identify the prime numbers between 1 and 50 and list them in the notebook. After a few minutes, she asked a student to write those numbers on the board and asked others if she was correct. After a detailed discussion between learners and the teacher, the teacher wrote the numbers on the board under the headings 'prime numbers' and 'composite numbers'. She asked the

learners if they understood and they responded, "Yes ma'am". The above scenario shows that T1 not only told and described the chapter but also questioned and listened to her students creating two-way communication and making her class interactive. She did not explain the definition of prime and composite number to students but she encouraged them to define them on their own, allowing them to give their own examples. The teacher moved around observing what learners were doing. Learners were not allowed to talk unless they wanted to speak to the teacher. The teacher, though, considered herself to be well-known about AFL strategies and had claimed of practicing it in teaching. I found that she was not implementing AFL strategies in the real sense during classroom instruction. During observation, I marked her using ego-involving feedback saying "You did not even know this" or "do more practice at home else you shall remain weaker in studies." According to Doyle (1984), teacher intervention should take place at all levels: class, group, and individual - helping and supporting the learners as needed. Therefore, the teacher facilitated the assessment and intervened in a manner which positively encouraged learning. From classroom observation, it was found that classroom activity was student-centered. However, AFL strategies were not implemented properly as students did not feel comfortable with somehow-rude gestures made by the teacher.

Lesson observation of T_5: I asked a teacher (T_5) for observation of her class, and it was my first observation with her. She was excited, and permitted me to observe. She requested me to come along with her in grade five. She had planned to teach the lesson on 'Prime and Composite Numbers' that day. She introduced me to the children and explained briefly about the purpose of class observation. I thanked them and sat behind one of the students on the last bench.

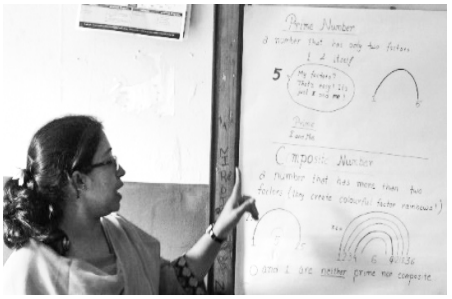


Figure 3: Teacher presenting a lesson

For teaching prime and composite numbers, T5 used the color metaphor by making a rainbow design for a better understanding (Pradhan, 2019a). She further mentioned that, for a prime number, there would be only two factors, "I and Me factor metaphor" which means 1 and itself. For a composite number, she created another beautiful colorful rainbow factor metaphor "I, Me and My factor metaphor" suggesting 1, itself, and all other factors of the number in a colored rainbow pattern. For example, in the case of number 36, it has the factors 1, 2, 3, 4, 6, 9, 12, 18 and 36. Then she gave some examples to check whether the numbers were prime or composite. She the students if they had found what was meant by prime and composite numbers. Then she asked they if they could write the definition of prime numbers and composite numbers. Finally, she wrote the definition of prime and composite number on the board and asked students to write

in their copy.

Next day the teacher entered the class and asked students to settle down. She asked oral questions about the activities they did the previous day. And then she asked to open the exercise on the textbook. She solved some problems on the board. Some problems were given to their students as class work. From the observation, I found that she used instructional materials to teach the concepts. She brought cardboard with beautiful drawings of the rainbow design and hung it on the side of the board. Her class was mostly teacher-centered. She asked some questions while teaching and asked the students to write some prime and composite numbers. She moved around observing what students were doing. But she did not give any constructive feedback to the individual learners. It was identified that student assessment was mostly detached from classroom teaching. The teacher used some assessment tools during classroom teaching but they were not employed as integral part of teaching and learning. She gave feedback in group as a whole rather than on individual basis. It was observed that she did not pay much attention to her students' responses. She asked her students to look at the board and mentioned she would do it, instead of emphasizing the participation of her students in the task. Most students were copying what the teacher wrote on the board. In conclusion, T5 did not use student assessment as an integral part of her classroom instruction.

Ways forward

Active participation of students in the instructional process is necessary for their successful academic accomplishment. Various reports presented earlier showed that the teacher did not use AFL properly in the classroom. A large number of students in a class, students with a poor academic background, overloaded curricula, and school culture were the major hindrances that demotivated teachers to use AFL in the classroom. Literature showed that most teachers do not have the knowledge and skills to implement AFL strategies in mathematics instruction. Teachers use different tools of AFL, but they use it only for summative purpose. However, some of them were found aware of the effective use of AFL in mathematics instruction. It is necessity for development of mathematical ideas, and for developing positive attitude towards learning the subject. Here I suggest some points that should be considered for the effective implementation of AFL strategies in mathematics instruction.

5.3.1 Encourage to adopt new pedagogy

Conventional ways of teaching and learning should be changed. Collaborative and constructive pedagogy should be adopted offers best strategy for supporting students to learn and improve their learning. Cultural Project Based Learning (CPBL) can be adopted in the teaching and learning

of school mathematics. CPBL is a culturally contextualized teaching and learning approach that connects students' everyday experiences and practices with school mathematics (Pradhan, 2019a). Mathematics has a cultural root and school mathematics connected with students' out-of-school activities helps to enhance learning. The project works assist learners in developing good collaborative work. Activities enable students to get exposed to a variety of questions more often; and when given prompt feedback from teachers, students are able to learn new ways of approaching questions and presenting their answers.

5.3.2 Provide teacher training and workshops

In various research studies, it is observed that the use of AFL for formative purpose is scarce in Nepalese schools. Most teacher participants, in this study, either do not have the actual knowledge of AFL and its effectiveness in classroom instruction, or do not want to incorporate AFL strategies during instruction. In the forehand, teachers should have the knowledge about what an ideal AFL is and the skills needed for using various tools of AFL for improvement in classroom instruction. The necessary trainings and workshops on the assessment for learning strategies should be organized for the teachers. They should be encouraged to adopt student-centered collaborative teaching pedagogy that connects students' everyday activities and experiences in classroom teaching. Teachers should be equipped with students' culture and be fond of the knowledge that can facilitate to understand school mathematics.

5.3.3 Motivate teachers with commitment

Though teachers use various assessment tools of AFL, the tools are not used for formative purpose. Teachers need to accept the challenges of adopting AFL strategy rather than continuing to use ritual practices. Teachers should be driven to understand that AFL strategies are not just a burden they have to do; rather, it provides a way to re-think daily classroom instruction in order to engage students in the learning process. The class work and homework attempted by the students should be checked sincerely, and the students should be provided with necessary feedback that helps to improve their mathematics learning.

5.3.4 Focus on implementation through reward and punishment

The development of policies will be a waste if there is fragile implementation. There should be a mechanism that would seriously check the implementation of the designed plan and policy. There should be a strong provision for the promotion of teachers based on their academic performance, which compels them or gets motivated towards serious implementation of the policies developed by educational departments. The responsible and committed school management committee is significant; and head teacher should be more responsible for the serious implementation of

AFL strategies. They should have some sort of authority to punish the teachers who neglect to implement the policies. The unmanaged number of students in a class and overloaded curricula might hinder the successful implementation of AFL strategies. The concerned authorities should be alert in it.

5.3.5 Make head teachers more accountable

The school head teacher needs to be accountable for the implementation of AFL strategy. Successful implementation of it requires a determined commitment and accountability of the head teacher. From my subjective knowledge and experience, some of the school teachers are doing their job without eagerness. They are taking the teaching profession just as a job. Nothing can be expected for the development of education from this mentality. For this, the head teacher should monitor the status of implementation by actively engaging with teachers throughout the learning process, and providing them with the opportunities and structures for meaningful teaching and learning. If the teacher hesitates to practice any such policies, the head teacher should take strict actions.

Concluding Remarks

Assessment is one of the major components of education system as it determines the outputs. It provides a basis to formulate policies, develop and design strategies, implement policies, and measure its effectiveness. AFL is one of the assessment techniques that provides necessary feedback to teachers and students in their areas of need for improving and enhancing classroom activities. From the analysis of collected data in this study, students were found motivated and would develop positive attitude towards learning mathematics. AFL strategy provides students with ample opportunity to detect their own weaknesses on the subject matter and respond with hand-on feedback for improving their learning. Thus, AFL plays an important role in enhancing students' learning and developing their levels of understanding.

A vast array of literature and field data have reported that most of the teachers hesitate and feel overburden to implement AFL strategies in classroom instructions. But if it were tasted properly and implemented correctly in the classroom instructions, teachers would enjoy it. In turn, it would be reflected upon students' creative, meaningful and joyful learning instead of being loaded from stress, anxiety and math-phobia. Until and unless the students are motivated and awaken up with their learning eagerness, zeal and enthusiasm, their learning efforts cannot catch the required momentum. For this, AFL strategy needs to be implemented in true sense with some improvement in the system including the provisions of training to the teachers, teacher-student ratio, workload of teachers, accountability of teachers and head teacher, reward and punishment, and coordination

mechanism among school management committee, resource center, and the line agencies at district and national levels.

References

Black, Paul J. (1993). Formative and summative assessment by teachers. *Studies in Science Education*, 21, pp. 49-97.

Chappuis, Stephen; and Stiggins, Richard J. (2002). Classroom assessment for learning. *Educational Leadership,* 60(1), pp. 40-43.

Collier, Calhoun C.; and Lerch, Harold H. (1969). *Teaching mathematics in the modern elementary school*. London: Collier-Macmillan.

Creswell, John W. (2009). *Research design*: *Qualitative, quantitative and mixed methods approaches* (3rd Ed.), New Delhi, India: Sage.

Curriculum Development Center. (2007). *National curriculum framework for school education in Nepal.* Sanothimi, Bhaktapur: Author.

Denzin, Norman K.; and Lincoln, Yvonna S. (2005). Introduction: The discipline and practice of qualitative research. In N.K. Denzin and Y.S. Lincoln (Eds.), *Handbook of qualitative research*. Thousand Oaks, CA: Sage. pp. 1-32.

Doyle, Walter. (1984). Effective classroom practices for secondary schools. *Research and Development Center for Teacher Education*. The University of Texas at Austin.

Education Review Office. (2016). *National assessment of student achievement 2015 (Grade 3 and 5).* Sanothimi, Bhaktapur: Author.

Gareis, Christopher R. (2007). Reclaiming an important teacher competency: The lost art of formative assessment. *Journal of Personnel Evaluation in Education,* 20(1-2), pp. 17-20.

Lynch, Brian K. (2001). Rethinking assessment from a critical perspective. *Language Testing, 18*(4), pp. 351-72.

Ministry of Education (2016). *School sector development plan Nepal, 2016/17-2022/23*. Kathmandu, Nepal: Author.

Mitchell, Christine; and Koshy, Valsa. (1993). *Effective teacher assessment*. London: Hodder and Stoughton.

Ozan, Ceyhun; and Kincal, Remzi, Y. (2018). The effect of formative assessment on academic achievement, attitudes towards the lesson, and self-regulation skills. *Educational Science: Theory and Practice*, 18(1), pp. 85-118.

Pradhan, Jaya Bishnu. (2019a). *Cultural metaphor for mathematical understanding in Nepalese context* (Ph.D. Dissertation). Faculty of Education, Tribhuvan University, Kathmandu, Nepal.

Pradhan, Jaya Bishnu. (2019b). Conceptual metaphor for teaching and learning of prime and

composite numbers at primary grades. *The Eurasia Proceedings of Educational and Social Sciences* (EPESS), 14, pp. 78-88.

Pradhan, Jaya Bishnu. (2020). Cultural artefacts as a metaphor to communicate mathematical ideas. *Revemop*, Ouro Preto, Brazil, 2, 1-34. DOI: 10.33532/revemop.e202015

Research Center for Education Innovation and Development (CERID) (2004). *Effective classroom teaching learning phase III: School-based assessment*. Kathmandu, Nepal: Author.

Shepard, Lorrie A. (2000). The role of assessment in learning culture. *Educational Researcher*, 29 (7). pp. 4-14.

Wiliam, Dylan. (2011). What is assessment for learning? *Studies in Educational Evaluation, 37*, pp. 3-14.

Assessment Focus: A Case of English Language Education Tests in Tribhuvan University Semester System

✍ Dr Netra Prasad Sharma

Lecturer, Mahendra-Ratna Campus, Tahachal

Abstract

Assessment practices are usually conceived in terms of two different foci, viz. "assessment of learning" and "assessment for learning". With the intent to sensitize the ones involved in the assessment process, this article reports the assessment practices taking place in the semester classes of Master's Degree in Education under Tribhuvan University. Exploration of the focus of assessment in semester classes being the major purpose of this paper, the data for the study came from the students majoring in English under the semester system. The data gathered through a questionnaire reveal that the assessment practices in English language education (ELE) classes run under the semester system are basically guided by the principle of "assessment of learning" rather than the principle of "assessment for learning".

Keywords: Assessment focus, semester, assessment for learning, internal evaluation, feedback

Context

There exists in the literature of language testing and assessment a thought-provoking discussion as regards the focus of assessment, i.e. whether any assessment should focus on the furtherance of learning a language or it should merely gauge what has been learned so far. The distinction between formative and summative assessments first made during the 1960s (Green, 2018) and the similar contrast drawn between "assessment of learning" and "assessment for learning" by Assessment Reform Group in 1999 (Davison and Leung, 2009) have stirred the field of language assessment as well.

In the Nepalese context, what is often discussed, if any discussion takes place, is about the content validity of the measurements employed for assessing student learning and, at times, also about the cognitive levels that such measurements represent based on Bloom's taxonomy of educational objectives even in case of teacher-based assessments; and, particularly, the externally set formal examinations. There exists hardly any discourse on how assessments can assist in promoting student learning. Even though this is true in the case of both school and tertiary education, this study has been focused on tertiary education. Nonetheless, the findings and conclusion are significant in the context of school education as well.

The issue in the relatively recent reintroduction of the semester system at the post-Graduate level in Tribhuvan University carries additional significance, as one of the advantages of the semester system is its assessment practices in that the practices are often conceived to provide a scaffolding for better learning. The university provisions, as the courses of study indicate, require that 40% of the total weightage be allotted to the internal assessments and 60% to the externally set assessments. Depending on the nature of the courses of study, some degree of variation can be marked in the procedures set for the internal assessments, for the conduction of which the individual teachers handling the respective courses of study and the concerned campus administration are held accountable. The weightage allotted to the internal assessments is further allocated to different headings such as attendance, participation in learning activities, and the assignments to be submitted by students. The very spirit of this "internal evaluation" component doubtlessly requires students to enhance their learning through regularly attending classes, actively taking part in the classroom activities such as discussion and presentation, carrying out small-scale research studies during the completion of the assignments, and so forth. Thus, it is clear that the semester courses demand active and continuous involvement on the part of students.

A brief note on instructional techniques will, I think, be relevant in this connection as teaching and assessment are inseparably connected with each other. Regarding this, the respective courses of study specify some teaching-learning strategies to be employed during coursework. On a careful examination of the strategies mentioned in the majority of the courses of English language education, it is evident that teacher's role is that of a guide and facilitator rather than a "lecturer" in the conventional sense. TU Semester System Operational Guideline (2014), under the heading "Teaching methodology" mentions: "The general teaching methodology of the program includes interactive lectures, students' presentations, case studies, and projects. The concerned departments and colleges shall determine the appropriate teaching-learning methods" (p. 3); and this is all under the heading. The rest that teachers and students are required to do is all implicit. This means that the dynamics of the classroom and assessment procedures are, to a large extent, left up to the teachers and students themselves.

The provisions spelt out in TU Semester System Operational Guideline (2014) appear as in Figure 1.

Figure 1: Internal evaluation in semester system

Evaluation

- Different methods of evaluation are to be adopted to assess students' performance.
- The in-semester (internal) evaluation shall have a total weight of 40 percent in each course. Students have to obtain 50 percent to pass in the internal exam. Without passing internal exam students will not be qualified to appear in the semester exam.
- Total weight of internal exam is divided into internal assessment, project work, class attendance etc. upon the recommendation of Subject Committees and approval by the Faculty Board.
- In case a student remains absent in internal examination due to serious illness s/he will be given one-time opportunity to appear in the exam if he/she is able to produce an authorized medical certificate. The internal exam notice will be published by the concerned department or campus.
- In case the percentage of marks obtained in internal exam exceeds the semester examination by more than 20 percent, the marks obtained in the internal exam will be reduced to 80 percent.

Source: TU Semester System Operational Guideline (2014, p. 3)

Assessment for learning and assessment of learning

The two terms are differentiated in the literature on testing and assessment (Black, Harrison, Lee, Marshall and Wiliam, 2003; Carless, 2017) based on their priority and methods. For instance, Black and the associates (2003) state: "Assessment for learning … serves the purpose of promoting students' learning … it is usually informal, embedded in all aspects of teaching and learning, and conducted by different teachers as part of their own diverse and individual teaching styles" (p. 2). The information provided by such assessments serves the purpose of feedback for further enhancement of teaching and learning. Accordingly, "An assessment activity can help learning if it provides information to be used as feedback by teachers, and by their students in assessing themselves and each other, to modify the teaching and learning activities in which they are engaged" (Black et al., 2003, p. 2). The assessments can take place any time based on the needs of students. Carless (2017, p. 3) asserts that "assessment for learning is now reasonably well-entrenched as part of higher education (HE) pedagogy". "Assessment of learning", on the contrary, focuses on certification, hence, on promotion to the next level, serving an administrative purpose rather than meant for learning. Therefore assessments are rather formal, less frequent, somehow detached from classroom teaching and learning with almost no control of teachers and learners (Black et al., 2003), and are often discussed in terms of their qualities and standards such

as reliability, validity, discrimination index, control of malpractices, and so forth (Carless, 2017).

The literature reporting empirical works almost definitely suggests that, from learning perspective, the practices akin to "assessment for learning", sometimes taken also as "constructive assessment" (Umar, 2018), generally yield better results in terms of students' educational achievements as compared to conventional summative types of assessment (Umar, 2018). Dochy, Segers and Sluijsmans (1999) highlight the value and procedures of self-, peer- and co-assessments, which align with the principles of 'assessment for learning' in the sense that such assessments enhance the skills and knowledge of students in assessing themselves as well as their own students in future. In addition, such assessments involve students (Falchikov, 2005), one of the primary stakeholder groups, in the assessment procedure considering it meaningful as well as democratic and, therefore, more ethical practice. "Diagnostic feedback combined with reflective self-assessment by each student, helps to create a continuous process that improves learning and integrates it with assessment." (Falchikov, 2005, p. 69)

Semester system and assessment practices

Pathak and Rahman (2013), discussing the importance of the semester system, assert that a system is not merely "an examination system rather an education system whose primary concern is learning instead of teaching and whose approach is learner centered instead teacher centered" (p. 84). They further discuss the "motto" of the system to be the "emphasis on continuous, comprehensive and in-depth learning aiming at capacity building of the students by developing required *Knowledge, Skills and Attitude*" [emphasis original] (p. 84). In a similar vein is Pabla's (2014) opinion as he states the rationale for the semester system to be of "enhanced value" and that the system requires "continuous learning and assessment". Furthermore, referring to Jadoon, Jabeen and Zaba (2012), he conceives the semester system to be characterized by "constructive feedback", accessibility of teachers, transparency in evaluation and so on. Singh and Kumar (2016) highlight the opportunity of students "for continuous learning and assessment or feedback and hence, a better paced understanding of the subject" (p. 89). They further conceive semester examinations as a "part and parcel of the daily routine" (p. 89). Similarly, students' satisfaction is another crucial factor for the success or failure of semester system (Aslam and others, 2012; Shoukat and Muhammad, 2015). Focusing on learning in the semester system, Aslam and others (2012) state that "learning of student is more important as compared to their position, marks and G.P.A." (p. 163). The opinions of various researchers just cited clearly suggest what should be the motivation of the teacher and students in the semester system.

Empirical studies also confirm that facilitating role of teachers and their constructive feedback are highly beneficial for ensuring any assessment so as to enhance learning. In this regard, a research

study conducted by Aslam and others (2012) revealed that only 55% respondents received proper guidance from teachers in completing assignments. The study also showed that "collaborative efforts of teachers and students" can enhance the satisfaction of students and that "teachers' efforts and behavior are the main factors which are directly related to" (p. 163) such satisfaction. Ali's finding (as cited in Aslam et al., 2012), reports that teachers "never give feedback" and, when students ask for it, they discourage students with "negative responses". In a research study, Ramsden (1979) discloses that learning is highly influenced by how students take the learning environment created by teachers. Another study undertaken by Deeley and Bovill (2015) portrays highly positive results of teacher-student partnership in learning – collaboration between the two parties in setting tasks, providing constructive feedback, peer assessment, and so on. In the same way, Deeley's (2017) study treats feedback as an essential component for learning and concludes that technology can enhance the "effective assessment for learning and feedback in higher education" (p. 1). In the Nepalese context, however, the assessment discourse, if any, in fact, seems to revolve around content validity and the representation of Bloom's taxonomic levels – ignoring almost completely the area under investigation, let alone the empirical works on how assessments can enhance learning. This study, thus, locates itself in this hiatus of assessment discourse and attempts to sensitize the concerned stakeholders, particularly teachers and students, to a colossally important aspect of semester system – assessment for learning.

Objective of the study

The objective of the study was to assess the assessment practices that characterize the "internal evaluation" as provisioned in the TU Semester System Operational Guideline (2014). In so doing, this study attempted to examine whether the existing "internal evaluation" practices in TU conformed to the spirit of the assessment practices advocated elsewhere in the spirit of the semester system – the spirit that assessments should be guided by the principle of "assessment for learning" rather than "assessment of learning".

Research questions

In line with the objective set to accomplish, this study attempted to answer the following research questions:

- How do teachers handle the tests and assignments during class time in the semester system?
- In what way do students define their prevailing role in semester classe.s?

Method

In order to attain the objective of the study, basically, a survey approach was adopted. For this a questionnaire consisting of the different aspects of "internal evaluation" was administered to

79 English education majors studying in the third and fourth semesters at Master's level in four different campuses in the Kathmandu valley. They had enough experience of being evaluated in the semester system. The respondents were required to mark either "yes" or "no" in the boxes provided against each of the statements pertaining to the different facets of "internal evaluation". In addition, they were orally asked to avoid marking "yes" or "no" if they did not at all feel comfortable enough in expressing their opinions in binary terms. Nonetheless, in such cases, they were asked to provide their remarks in words in the "Remarks" column of the questionnaire. Furthermore, the respondents were also requested to express in writing their overall impression or any incident related to their test-taking experience. This supplied the study with some qualitative data as well. The consent of each of the respondents was obtained through a "consent form" before the administration of the questionnaire. In the same way, immediately after the questionnaire was administered to the students, a brief informal discussion was held with each of the teachers teaching the same students in the three campuses. The data from the discussions were recorded through note-taking during the discussions and within a few hours of the discussion through the reconstruction of major points.

The data thus obtained were analyzed using the descriptive statistics of frequency and percentage and the qualitative data were used in order to supplement the discussion of the quantitative data.

Results and discussion

The binary data were counted, and their frequency as well as percentage calculated. Table 1 below displays the results.

As the figures in Table 1 indicate, a majority of the data associated with each of the statements consistently portray the results that go counter to the spirit of the principle of "assessment for learning". It is important to note that the 20 statements in the table cover a few major themes, viz. the nature of tests and assignments given, the purpose of tests and assignments, feedback, self- and peer-assessments, and the motivation of teachers and students in general.

Teachers being limited mostly to the fixed number of formal tests as dictated by the campus administration and the respective courses of study (statement 1 in the table) clearly suggests the general pattern of the assessment practices in classroom – the pattern that is counter to the spirit of the semester system. TU Semester Operational Guideline (2014) dictates that the total weightage for the internal evaluation be allocated to different criteria such as "internal assessment, project work, class attendance" (p. 3), and so on.

Table 1: Responses of students

S. N.	Statements	No. of responses and Percentage		Remarks
		Yes	No	
1.	In addition to formal tests, we are also given informal tests and assignments.	28 (36%)	49 (64%)	MM
2.	The purpose of the **formal** tests and assignments given in the classroom is to find out the level of students so that it would be easy for the teacher to award scores accordingly.	64 (83%)	13 (17%)	OfF, M
3.	When given, the purpose of the **informal** tests and assignments is to find out the level of students and to award marks accordingly.	46 (60%)	31 (40%)	OfF, M
4.	When given, the purpose of the informal tests and assignments in the class is to enhance the learning of students.	13 (17%)	64 (83%)	M,M
5.	Teachers generally escape our requests for their comments and feedback.	50 (63%)	29 (37%)	
6.	When informal assessments are given, the teacher provides detailed comments and feedback for further improvement.	25 (32%)	54 (68%)	
7.	Until and unless we ask for the comments and feedback, we are not given any.	52 (68%)	25 (32%)	M, DotT
8.	We are given general comments and feedback in the whole group.	65 (83%)	13 (17%)	M
9.	As a rule, we are given comments and feedback individually.	29 (38%)	48 (62%)	MM
10.	Teachers usually give extra time for providing comments and suggestions to us.	29 (37%)	49 (63%)	S
11.	We have opportunities to discuss with our teachers about the marks we get and the justifications for the marks.	25 (32%)	54 (68%)	
12.	We are involved in peer assessments.	06 (8%)	72 (92%)	S
13.	We are asked to self-assess our work.	16 (21%)	60 (79%)	M,MM

S. N.	Statements	No. of responses and Percentage		Remarks
		Yes	No	
14.	We are informed of the marking criteria in advance before the tests and assignments are given.	24 (30%)	55 (70%)	
15.	Teachers, in general, attempt to maintain discipline in the classroom with their right to award 40% of the full marks.	59 (79%)	16 (21%)	SoT, M, MM
16.	Generally, the students in my class tend to escape the tasks given by teachers.	47 (59%)	32 (41%)	
17.	In general, the main focus of students is to get better marks than to learn better.	60 (76%)	19 (24%)	MoT
18.	For good marks, students involve themselves even in malpractices like cheating.	48 (62%)	30 (38%)	MoT, M
19.	Overall, the purpose of our assessments is grouping/ classification/discrimination.	45 (58%)	32 (42%)	
20.	Overall, the purpose of our assessments is to enhance student learning.	28 (35%)	51 (65%)	

Notes:

M: missing; N: never; OfF: only for formality; NA: not always; S: sometime/s; SoT: some of them; MoT: most of them; R: rarely; DotT: depends on the teacher

In order to avoid clumsiness, the fractions in case of percentage have been avoided. Five hundredths or more have been counted as upper whole numbers whereas numbers below that have been ignored.

Regarding the final decisions on the nature and number of internal assessments, the guideline leaves authority to the concerned Subject Committees, the decisions of which are, in turn, to be approved by the Faculty Board. A quick look at the courses of study of English education reveals the variation of some degree in the nature and the number of the internal assessments provisioned formally. In addition, in some campuses, there also exists the practice of formal written examinations as scheduled by the campus administration. In these exams, even though each of the examinations carries 60 full marks as in semester-final external examinations, the scores obtained by individual students are converted to the 10% of the total 60 points. Each of such examinations equals to one of the assignments/internal assessments provisioned in the

respective course of study, carrying 10 points. As the majority of the data indicate, the assessment practices are limited to the formal assessments unlike Singh and Kumar's (2016) assertion that the assessments are a "part and parcel of the daily routine" (p. 89), i.e. they should be frequent and not be limited only to a few formal assessments. Nonetheless, during informal discussions, the three teachers claimed that they did employ even the informal assessments even though the heavy course work created problems in handling such assessments.

As the data reveal, the purpose of assessments and assignments is clearly perceived by the majority of the students to be the grading, discrimination and classification of students, which again derails from the focus of in-depth learning of the subject matter in the semester system.

Regarding feedback, often regarded as one of the characteristic features of "assessment for learning" (Black et al., 2003; Falchikov, 2005; Pabla, 2014), the teachers' reluctance to provide comments and feedback on students' work as evident in the tendency to escape providing comments and suggestions to individual students; and, if any such feedback, that is mostly in the whole group and rather superficial. Such a tendency overtly indicates that the focus of assessment is on grouping and discrimination rather than on enhancing the learning of students – the fact also evident in teachers' unwillingness or obligation, whatsoever, of not allocating extra time for supplying comments and suggestions to the students on their work.

Opposed to the three teachers' claim that they did provide required feedback to their students, one of the respondents expressed his opinion in a grudging tone, "The assessment system is only for the formality but not for the students' learning improvement. We did not get any feedback on our assignment and test from our teachers". The opposing claims might be an area for further research but, as the majority of the students perceive the practice akin to "feedback", the assessment scenario is obviously against the spirit of "assessment for learning" and the semester system. "Merely presenting users with a test score, without any accompanying explanations as to what that score might mean, is clearly not very helpful, even on proficiency or achievement tests, but it is quite inappropriate on diagnostic tests" (Alderson, 2005, p. 208). The majority of the data associated with Statement 11 in the table show that students are deprived of the opportunity to discuss with their teachers the scores they obtain, which indicates the conflicting scenario of the classroom in the semester system.

The data associated with statements 12, 13 and 14 in the table reveal that peer- and self-assessments are almost non-existent, suggesting teachers' emphasis on "rating" for grouping and discrimination purposes.

As to the overall motivation of teachers and students, the majority of the data disclose the facts

again counter to the principle of "assessment for learning" and the semester system. Teachers not informing students of scoring criteria, lack of their motivation in providing feedback, and their tendency of maintaining discipline in the classroom based on their right to award the scores allocated to internal evaluation, as the table shows, obviously lack any conformity with the emphasis on learning and the semester system. In the same way, students' motivation also clearly goes counter to the focus on learning – the fact evident, as the data portray, in students' tendency to escape the tasks and assignments as well as their emphasis on better scores rather than learning.

In a similar vein are the opinions of some students. For instance:

> *Assignments are only for the fulfillment of the requirements of the course rather than for focusing on students' practical knowledge. Students are compelled to do assignments as part of their workload. Groupwork/assignments are only for fulfilling their duties.*
>
> *There is no fair marking due to political domination. No any feedback is provided after assignments.*
>
> *I have the experience that some irregular students get more marks than regular ones from 40% (given by teachers). Group assessment or presentation covers only one topic for the students, which creates no motivation or encouragement for the efforts of students. Also it shows the formality of students and teachers.*

Table 1 depicts yet another facet of ELE classrooms, where the demeanour of students is portrayed again counter to the spirit of the semester system and the principle of "assessment for learning". A majority of the data reveal the inclination of students towards involvement in examination malpractices during the accomplishment of tests and assignments. This all undoubtedly crosses the premises of "assessment for learning". This motivation of students is further propped by what the respondents supply in writing as:

> *Most of students don't prefer testing and assignments.*
>
> *I, myself as a student of M.Ed. third semester, think that our assessments focus only on our marks. Students are motivated to do all their tasks for their better marks rather than the achievement of their learning goals. This denies the reality that learning is for self-confidence and self-awareness. I think learning is for the self and a way of gathering more and more knowledge rather than marks.*

Overall, as the table shows, the majority of the respondents have developed a consolidated but counter-theory impression of the existing practices of "internal evaluation" in the semester system.

That is to say, unlike the theoretical advocacy for "assessment for learning", at least in case of "internal evaluation" as envisaged in the inherent nature of the semester system, the respondents think that the assessment affairs have gone the other way in that the current focus of assessments carried out by the teachers involved in the "internal evaluation" component of the semester system fundamentally aligns with the principle of "assessment of learning", i.e, grouping, classification and discrimination, rather than "assessment for learning" – the conclusion of this research further propped by the assertion of one of my respondents' statement that "the testing system is faulty and pass-oriented, which should be improved by making it learning-centered".

Putting the findings in terms of the research questions, the answers are clear – teachers in the semester classes handle the provisions of tests and assignments rather monopolistically in a way individual teachers wish so as to emit the reflection of the classroom generally counter to the semester spirit, and that students define their existing role in a similar vein, i.e. their focus rests more on scores rather than learning.

Conclusion

The scenario of the existing assessment practices, as the results portray, clearly suggest the testscape that lacks alignment with the spirit of the principle of "assessment for learning" and the semester system advocated elsewhere. The focus of the assessment under consideration evidently lies on "assessment of learning" rather than on "assessment for learning" – the fact propped by the findings that include teachers' reluctance to spare their time for providing detailed comments on students' work, their tendency to take the internal assessment marks as a tool to maintain discipline in the classroom, almost nonexistent assessment activities other than the ones formally provisioned in the course of study, students' concentration on obtaining better scores rather than on enhancing their learning, involvement of students in examination malpractices, and so forth.

References

Alderson, J. Charles. (2005). *Diagnosing foreign language proficiency: The interface between learning and assessment*. London: Continuum.

Aslam, Hassan Danial; Younis, Attia; Sheik, Aliya Ahmad; Maher, Marukh; and Abbasi, Zahra Ahmad. (2012). Analyzing factors affecting students' satisfaction regarding semester system in universities of Pakistan. *Journal of American Science, 8*(10), pp. 163-70.

Black, Paul; Harrison, Christine; Lee, Clare; Marshall, Bethan; and Wiliam, Dylan. (2003). *Assessment for learning: Putting it into practice*. Berkshire: Open University Press.

Carless, David. (2017). Scaling up assessment for learning: Progress and prospects. In David Carless, Susan M. Bridges, Cecilia Ka Yuk Chan, and Rick Glofcheski (Eds.). *Scaling up assessment for learning in higher education*. Singapore: Springer Nature Singapore Pte

Ltd., pp. 3-17.

Davison, Chris; and Leung, Constant. (2009). Current issues in English language teacher-based assessment. *TESOL Quarterly, 43*(3), pp. 393-415.

Deeley, Susan J.; and Bovill, Catherine. (2015). Staff student partnership in assessment: Enhancing assessment literacy through democratic practices. *Assessment and Evaluation in Higher Education*, pp. 1-15. doi: 10.1080/02602938.2015.1126551

Deeley, Susan J. (2017). Using technology to facilitate effective assessment for learning and feedback in higher education. Assessment and Evaluation in Higher Education, pp. 1-20. doi: 10.1080/02602938.2017.1356906

Dochy, F.; Segers, M.; and Sluijsmans, D. (1999). The use of self-, peer and co-assessment in higher education: A review. *Studies in Higher Education, 24*(3), pp. 331-50. doi: 10.1080/03075079912331379935

Falchikov, Nancy. (2005). *Improving assessment through student involvement*. Oxon: Routledge Falmer.

Green, Anthony. (2018). Assessment for learning in language education. *Iranian Journal of Language Teaching Research, 6*(3), pp. 9-18.

Pabla, Maninderjit Singh. (2014). A paradigm shift from semester system to annual system. *Paripex - Indian Journal of Research, 3*(4), pp. 173-74.

Pathak, Tarali; and Rahman, Md. Afzalur. (2013). Perception of students and teachers towards semester system: A study in some selected degree colleges of Nagaon town of Nagaon district of Assam. *Journal of Education and Practice, 4*(1), pp. 84-91.

Ramsden, Paul. (1979). Student learning and perceptions of the academic environment. *Higher Education* 8 (1979), pp. 411-27.

Shoukat, Lubna; and Muhammad, Waheed. (2015). Perception of teachers and students towards the functionality of semester system at university level in the context of Pakistani social and administrative set-ups. *International Journal of Teaching and Education, 3*(4), pp. 68-80. doi: 10.20472/TE.2015.3.4.006

Singh, Vinod Kumar; and Kumar, Pravin. (2016). Challenges in implementation of semester system in globalized world. *International Journal of Applied Research*, *2*(3), pp. 89-91. Retrieved from www.allresearchjournal.com

Tribhuvan University. (2014). *TU semester system operational guideline*. Unpublished guideline, TU, Kathmandu.

Umar, Abdul Majeed Al-Tayib. (2018). The impact of assessment for learning on students' achievement in English for specific purposes: A case study of pre-medical students at Khartoum University: Sudan. *English Language Teaching, 11*(2), 15-25. doi: 10.5539/elt.v11n2p15

Mathematics Teachers' Strategies and Their Impact on Society Through Student Learning

✍ Dr Bishnu Khanal

Associate Professor, Mahendra Ratna Campus, Tahachal

Abstract

This paper highlights the teaching strategies used by mathematics teachers to promote students' learning strategies and their impact on society through students' learning. Two mathematics teachers, six grade IX students, and four parents from two conveniently selected schools of Kathmandu district of Nepal were selected purposively as samples for the study. The author employed a qualitative study design using class observation and interview methods. Four major themes emerged from the thematic analysis of observation and interview data which were classroom environment, perceived nature of teacher, teaching approach, and teacher-student relationship. Teacher's' teaching strategies have a significant effect on students' learning strategies. Teaching strategies ultimately make good relations among students, parents and teachers. As the students appreciate the teacher's teaching strategies, they are encouraged to develop their learning strategies – increasing the learning achievement which ultimately builds a good relationship with parents. Teachers are required to work as per students' strengths and interests to meet their learning expectations.

Keywords: Impact on society, learning strategies, mathematics learning, student achievement, teaching strategies

Background

Teaching mathematics effectively is a big challenge for most of the mathematics teachers in Nepal. Teachers' teaching strategies and students' learning strategies in mathematics affect student achievement. To reduce the conflicts in teacher-student styles and strategies, some researchers advocate that teaching and learning styles and strategies should be matched (Smith and Renzulli, 1984). The narrow gap between teachers' intension and learning interpretation not only promotes student achievement; but it also builds a good relationship between mathematics teachers, students, and parents that marks a positive effect on society.

According to Dunn (1995), the mismatch between teachers' teaching styles and the learning styles and strategies of students leads to frustration and a lack of continued growth of achievement. Similarly, Doolan and Honigsfeld (2000) explain that when students are taught with methods

dissonant from their learning style and strategy, they do not succeed in mastering the subject matter in the expected manner. As research suggests, effective use of learning strategies can significantly contribute to students' achievement (Protheroe and Clarke, 2008). The better performance of students in mathematics has positive impacts on parents. Moreover, students' better achievement results in a better teacher-community relation in society. Some scholars have shown a direct link of performance with social ties. Homans (1958) states in his social exchange theory, that social relation is created; and people are integrated based on an individual's behaviour. Homans further states that the proper conduct of an individual makes influences on other's behaviour. (Homans, 1958).

This study is also based on the theory of social constructivism in teaching and learning of mathematics. According to this theory, learner constructs mathematics knowledge through social interaction. Negotiation plays an important role in learning mathematics. It emphasizes the point that children learn from others or society through active interaction and participation in group or peer activities. Scaffolding and support are required for learners. Vygotsky explained the Zone of Proximal Development (ZPD) as a space between a child's ability in independent problem solving and the potential ability to solve the problem with guidance (Burton 1999, Panthi and Belbase, 2017). Vygotsky's social constructivism theory together with Homan's social exchange theory is applicable in this study to explore the impact of teaching strategies on society (parents and other people) through student learning.

All mathematics teachers should know what learning strategies have been used by the students in class and their impact on society. The above mentioned practical experiences and theoretical background have inspired the author to investigate teaching strategies used by mathematics teachers to promote students' learning strategies and their impact on society through students' learning in the Nepalese context.

Research questions

This study has attempted to answer the following major questions:

1. What are the roles of teaching strategies to promote students' learning strategies?
2. How do teaching strategies help to promote students' learning strategies?
3. What is the impact of mathematics teachers' teaching strategies on making better relations in society through students' learning?

Literature review

The literature related to the teaching strategies and the teacher's role in using students' learning strategies is discussed in the following sub-sections.

Teaching strategies

Teaching strategies include the instruments of the educational procedure in classroom situation, stages of education, theories of education, teaching activities, and establishment of critical relationships between theories and training processes. Effective teaching strategies in mathematics classes may enhance students' mathematics learning. The behaviour of the teacher in classroom should be admirable for establishing better relations between teacher and society. What students learn depends not only on what they are taught, but also on how they are taught, their development level, and their interests and experiences. That is possible by promoting students' learning. In line with this view, Keefe (1979) has pointed out several teaching strategies that are needed to be applied by mathematics teachers. It includes the use of concrete representations, provision of time for students to play, use of examples and non-examples, introducing and implementing technology, using contextual and prior knowledge of the learner, and engaging students actively in learning.

Cangelosi (1996) argued that children learn mathematics with understanding when they solve mathematical problems. Moreover, teachers' teaching strategies play an important role in societal behaviour towards him/her. Teachers need to engage in higher levels of mathematics to improve their content knowledge and to explore and reflect on their teaching strategies. The active participation of students in mathematics enables teachers to assess the levels of competence development of all students in the classroom by walking to monitor their reactions. These strategies are especially useful when it becomes part of a daily mental lesson in mathematics.

Teachers' role in using students' learning strategies

For teachers to be more productive with a diverse group of students, their role is vital to carry out the responsibility in changing and shaping students' behaviour. In mathematics, teachers can implement instruction in various ways. Most of the mathematics skills are used in math courses, and students are threaded in areas of other contents. Teacher should view the content material before teaching to determine what type of strategy could be helpful for the students to generalize the content easily. Pewewardy (2002) suggested teachers to recognize their own world views and understand the preferences of students. Canfield (1992) further described that knowing the kinds of learning styles and strategies that students most prefer may help teachers to develop alternative course structures that provide a better fit between their teaching styles and the learning styles and strategies preferred by their students. Park (2001) also has mentioned that teachers could meet the learning needs of all students with multiple learning opportunities, given the reality that mathematics classes usually consist of diverse learners.

National Council of Teachers of Mathematics [NCTM] (1989) stated that teachers are expected

to understand the emerging standards and views of learning, in order to change their roles and practices accordingly.

Education Review Office (ERO, 2019) conducted the national assessment of students' achievement in Mathematics for Grade 5, which found that the students receiving support in their study from home and extra tutorial support outside the school performed better in mathematics. The role of teachers seems to be immense in improving students' learning of mathematics which, in turn, contributes to the development of a nation. It is possible to develop the nation/society only when the parents feel responsible for their children and teachers feel responsible for schools and students. While teaching mathematics, teachers should pay due attention to students' prior knowledge to improve their achievement. Furthermore, teachers need to vary teaching styles and techniques so that the students do not feel disturbance in the classroom. Khanal (2016) conducted a study on teaching style preference of Nepalese mathematics educators and found that educators are flexible for the selection of particular teaching styles. Seeking greater insights into how children learn from the way teachers discuss and handle the lesson in the school and teach students the life skills they need could be one of the greatest achievements in the teaching process. When teachers give due assistance to students to use their preferred learning styles and strategies, students start to feel at ease and learn mathematics in a relaxed manner. In this connection, citing Dunn (1995), Chan (2001) has described that students have typical ways of taking, processing, internalizing, and retaining information and skills – which are generally considered to be the students' learning styles. Teachers' teaching strategies need to be geared to match the learning styles and strategies of students. Teachers can guide students as they move through several stages in the process of developing in-depth and flexible knowledge.

Methods

Two schools of Kathmandu district in Nepal (one English medium private school and another Nepali medium community school) were selected as study sites following the convenient sampling approach to observe class regularly. There were 54 students of grade IX in English medium private school and 68 students in the Nepali medium community school. After the observation of their behaviour, attitude, and performance, three students, a mathematics teacher and two parents from each selected school were purposively selected as the key informants. The researcher employed qualitative method for data collection, analysis, and interpretation.

Observation and interview guidelines were used to collect the information from the key informants. The respondents were interviewed individually, which were both video- and audio-recorded. Observation guidelines were prepared before the observation; and accordingly, 15 lessons of grade IX mathematics classroom were observed in each sample school; but out of

them, only some related observational data are presented in the paper. The re-interviews with some participants were also conducted in the interval of 15 days, and recorded to obtain the missing information. The qualitative information collected from observation and interviews were 'transcribed' and 'translated' into English, 'encoded' and 'categorized thematically' (Creswell, 2014, Khanal, 2015). The thematic categories were based on the learning strategies used by the students taking the role of teachers' teaching strategies into account and their impact in society through students' learning every time. The information was critically analyzed substantiating with theory and the results of previous studies.

Results

Four major themes emerged from the thematic analysis of observation and interview data. These themes were: classroom environment, perceived nature of teacher, teaching approach, and the teacher-student relationship.

Classroom environment

It was seen from the analysis of the information that teachers were organizing the students, space, time, and materials to foster students' involvement in all classroom activities and to establish a productive working environment. The differences in learning styles of students in a class and the teaching styles of the instructor (Felder and Silverman, 1998; Lawrence, 1993; Schmeck, 1988) lead to learning difficulties in students. When there is a mismatch between these two, students tend to be bored and inattentive in the class and perform poorly in exams. All these factors come under classroom management. "A teacher should be careful to maintain a supportive classroom environment and even to manage students' learning time, space, and materials as well as the order in the class", claimed a mathematics teacher (T1) of the sample school. It could be described as the teacher's ability to cooperatively manage the classroom activities under discipline and in a democratic way, and safe, orderly, and conducive learning environment.

An effective teacher is an outstanding classroom manager also. Effective teaching and learning will not take place in a poorly managed classroom. "I have not been able to promote learning strategies of students managing the required materials and tools as our school does not afford", another teacher (T2) realized in the interview. However, a student (S1) expected, "I want a supportive environment at school and home". Similarly, another student (S2) remarked, "While teaching if he speaks politely then students can understand easily and can gain high marks." Another student (S6) expressed, "Teachers should help students by understanding their difficulties in learning mathematics and monitor talent and weak students equally." During classroom observation in the public school, the teacher was found using only traditional lecture method without considering

students' interest and way of learning. Students were trying to talk with peers but the teacher did not allow them to talk to each other and kept the classroom silent. The teacher was delivering lecture and solved mathematics problems on the whiteboard without allowing them to discuss. These narratives and classroom scenario show that the teacher only maintained silence in the class. The classroom should be managed by maintaining access and equity of learning for all students. Teachers should be sensitive in terms of their ability and interest and have to manage the classroom accordingly. They have to incorporate various learning styles and strategies followed by students (for example, peer learning and help-seeking etc.) in their instructional design; but this environment was not found in the classroom. It showed there is a mismatch between classroom management and students' expectation.

Perceived nature of teacher

It is noted that effective classroom management did not mean to create fear or anxiety in students, nor it involves the use of authoritarian teaching. Effective learning in the classroom depends on the teacher's ability to maintain interest that brings students to the course in the first place (Erickson, 1978). Not all students are motivated by the same values, needs, desires, and wants. The teachers are to be strict as well as friendly and supportive. Parent A stated:

> *My daughter complains about mathematics teachers that he is a strict teacher and punishes when students do not follow his instruction. I do not like his behaviour. Once, I complained to the headteacher also. I do not prefer such a teacher.*

If a teacher is authoritarian, students get frightened and do not receive what the teacher teaches. "I have never asked any question to math teacher because I am afraid he might scold me," a student (S1) expressed his fear. As a result, he never tried to seek help from teacher. Similarly, Parent B stated, "I do not like the teacher who does not involve and motivate my child in learning mathematics." In the same line, another student (S3) said, "Our mathematics teacher does not care us. He always watches the talented students, asks them to solve problems on white-board. He scolds me if I cannot solve the problem." Another student (S4) stated, "He only focuses on first, second, or talented students; but he doesn't care the weak students. He rarely talks outside the class about the subject matter, his experiences, and our daily life beyond the class." This was noted while observing the classroom in a public school. The teacher was teaching laws of indices; and he listed all the formulas on the whiteboard. He did not involve students in deriving different formulas. He told the students to remember the listed formulas which are important to solve the problems of indices. One of the students in the classroom asked teacher, "Sir, how does the formula a0=1 come?" The teacher replied, "It was derived by a mathematician, you just remember it." The teacher was asking very few questions only to the students sitting on

the first and second benches who were high achievers. But this situation was observed a little different in a private school. The teacher was teaching the derivation of the formula (a+b)3= a3 +b3+3a2b+3ab2. He was asking some questions to the students after presenting the teaching material the model of (a+b)3. He gave the model to different groups of students and assisted them to derive the formula. The students enjoyed in the classroom. The narratives and observed fact show that if mathematics teachers involve, activate and support the students, they can learn mathematics easily; but such a situation of secondary school mathematics teachers was still not found in every class. Our mathematics teachers are required to teach according to the students' interest and achievement level. When students do not like the teacher's personality and way of teaching, this might affect students' learning of mathematics. That means how students perceive the nature of teacher (whether friendly or unfriendly, supportive or unsupportive, flexible or rude, and more strict or less strict, etc.) determines how they approach the teacher for learning mathematics. Even a teacher's nature in terms of content presentation, linking to other concepts or discipline, and social and political affiliations etc. might affect students' attitude toward them.

Teaching approach

During classroom observation, it was mostly found that teachers were using the traditional teaching approach in both public and private schools. Teachers were not found using a constructivist teaching approach in the classroom. The teachers themselves made most of the decisions in the classroom, emphasized teaching the content, and kept the students in a passive role. They ignored the learner-centred approach and followed an authoritative teaching style, instead. A teacher (T1) stated, "Students seek solutions to the question rather than thinking differently to solve the problems. Students rarely involve themselves in developing their learning strategies. If a problem is difficult, I resolve it on the board; students copy and read it."

It was found from the observation of both teachers' classes that students were learning while their teacher was solving the problem on the whiteboard, and they copied it at the same moment. It was reflected in the interview that the student (S2) responded, "Our teacher solves the problems on the whiteboard; I copy and try to understand looking at it." Another student (S3) stated, "I do not think the teacher teaches using different materials and strategies. He just says to follow his styles to solve the problems. Teacher rarely encourages us to develop our styles of learning."

The above narratives of these students showed that mathematics class is found teacher-centred. The students were seldom encouraged for active engagement and empowerment to direct their learning. Students were not satisfied with the behaviour and teaching strategies of teachers. There may be some problems on the teacher's side as well. When a teacher (T2) was asked, the response was:

> I have to complete the course within the limited time. I am compelled to solve the problems of students and go ahead rather than to engage them in their styles of learning. The course contents to be taught and available time for completion of the course have matched.

Students were unable to develop any effective learning strategies in mathematics. In a similar tone, a student (S5) remarked, "Teacher solves most of our problems and forwards the course. Sometimes, I cannot even ask a question to the teacher." Most of the students were exam-oriented and gave an excellent 'output', but their perceived teaching style and learning strategies were not related. Another student (S4) replied, "I ask the mathematics problems to my sisters at home." This expression made it clear that there was no suitable learning environment in the classroom for the students. Teachers did not facilitate their students much while solving mathematics problems. The teachers did not encourage the students to solve the problems themselves.

Teacher-student relationship

Teachers are the crucial agents to promote students' learning strategies. They need to assist the students by designing instruction that meets the needs of individuals with different stylistic performances and by teaching students how to improve their learning strategies. A student (S5) said, "I feel comfortable asking my problem in mathematics when the teacher is in a happy mood." "The mutual relationship between teachers and learners would be beneficial in the learning of mathematics", agreed the mathematics teacher (T1) in an interview. Teaching and learning are inseparable. Teachers must recognize the situation of diversity and complexity in the classroom, be it the matter of ethnicity, gender, culture, language ability, and interest. "If a teacher comes near to us and asks about our difficulty and helps us to understand, we feel comfortable to learn mathematics", a student (S6) stated in the interview. Getting students to work and learn in class is mostly influenced in all these areas. Classroom diversity exists not only among students and their peers but maybe also exacerbated by language and cultural differences between teachers and students. In this line, Parent C stated:

> *When my child is encouraged to explore his/her strategies of learning mathematics he/she is more engaged in solving problems at home and becomes happy. I prefer a teacher who encourages exploring the strategies of students himself/herself rather than dictating the teachers' strategies.*

It can be argued that both entities are essential in enhancing or impeding the learning process of students. Also, teachers' view on learning strategies of their students was one of the factors that affected the learning of mathematics and had an enormous implication in learning. The well-

trained teachers know how to guide the learning of their students in teaching-learning process by maintaining a good rapport with the students. A teacher (T1) was found playing important role in changing and shaping pupils' behaviour in school. In the same line, Parent D stated:

> *In our school, we have a good mathematics teacher. He teaches joyfully, and he shows good behaviour with students. My son often talks about his mathematics teacher as he understands him well. My son gets good marks in mathematics. He likes mathematics teachers.*

Good behaviour or better teaching methods applied by teachers are reflected in the behaviour of students after the class hour. Mathematics teachers had a significant role in creating a pleasant atmosphere for the learning of mathematics, and in arousing the interest of students to use their preferred learning strategies. Teacher's teaching strategies have a reflection in society through student's learning. The teacher preferred by students in the classroom has a good reputation. In contrast, the ones who are not encouraging students often lack social recognition, as they do not have good relationship with the students and parents as well. Hence, students' choice of learning strategies may depend not only on teacher strategies but also on their mutual relationship. Hence, students' choice of learning strategies may depend not only on teacher strategies but also on the relationship between teacher and student.

Discussion

Teachers' teaching strategies have a significant role in promoting students' learning strategies. Students learn in several ways – reflecting and acting, reasoning logically and intuitively, memorizing and visualizing. Teachers' teaching methods are also varied – while some have used lecture method; others demonstrated or discussed; some focused on rules, others on examples; some emphasized memory, others understanding. However, mismatches existed between teachers' teaching strategies and students' learning strategies.

The teacher must recognize individual differences among his/her students and adjust instructions that best suit to the learners. In this line, ERO (2019) emphasized that as teachers are the key actors to improve classroom practices, they are expected to be conversant with various teaching strategies that need to be meaningfully employed to enhance students' learning. It is always a fact that as educators or teachers, we play varied and vital roles in the classroom. Severe mismatches may occur between the learning styles of students in a class and the teaching styles of the instructor (Felder and Silverman, 1998), which results in learning difficulties among students. When there is a mismatch between teaching styles/strategies and learning strategies students tend to be bored and inattentive in the class and perform poorly in exams (Khanal, 2011, 2015). As a result, they

may develop a negative attitude towards learning mathematics and give up study. Parents also may have a negative feeling towards mathematics teacher.

This finding is consistent with the views of Homans (1958) as the proper conduct of an individual influences others' behaviour. Therefore, teachers' teaching strategies of the must be expertly matched with the learning strategies of the students. When teacher behaviour and teaching strategies result in better performance of students, teachers are well appreciated in the society. Effective instruction reaches out to all students and becomes coherent with their learning strategies. This finding is consistent with the views of Smith and Renzulli (1984) as they claim that students taught entirely with methods antithetical to their learning style might be made too uncomfortable to learn effectively. Still, they should have at least some exposure to those methods to develop a full range of learning skills and strategies. However, motivation is consistently a critical determinant of students' learning and achievement within academic settings (Pintrich and Schunk, 2002).

What teachers need to do is to help students develop the skills and strategies needed for learning effectively so that teaching strategies will match the students' preferred learning strategies (Khanal, 2015). However, encouragement and motivation for active involvement of the students to direct their learning were least used in Nepalese mathematics classes. As a result, students were unable to develop effective learning strategies. Teachers were indifferent towards students' interests and personal life; and they imposed only their authoritarian teaching styles without bothering themselves to understand students' learning strategies, for example, peer learning, help-seeking, time and resource management, critical thinking, metacognition, elaboration, rehearsal, organization etc. Such differences in the styles and strategies between students and teachers consistently and negatively affect student grades (Wallace and Oxford, 1992). It is when students' learning styles are matched with appropriate approaches in teaching that their motivation, performances, and achievements will increase and be enhanced (Brown, 1994). If teaching is to retain the confidence of society, the teaching strategies must adapt a great deal so that it can act constructively within a fast-changing society (Coolahan, 2002).

Conclusion

Teachers are considered light in the classroom; and they are entrusted with so many responsibilities that range from the very simple to most complex and challenging jobs. Learning occurs when students are motivated. However, driving students towards learning requires a very challenging role on the part of the teacher. It involves a variety of teaching styles or techniques to capture students' interests. Students learn in different ways, and teachers' teaching strategies are also different. The teaching strategies of the and learning strategies of students must be matched. The

mismatch between these two results in ineffective teaching-learning activities. Teachers are crucial actors to promote learning strategies. As Burton (1999) highlighted that social constructivism focuses on student-centred teaching approaches such as cooperative and collaborative learning, teachers should focus on peer learning, interaction, and active participation of students in learning mathematics. Teachers need to assist their students in fostering effective learning strategies by designing instruction that meets the needs of individual students with different strategic performances. Teachers' teaching strategies promote the learning strategies of students. It ultimately impacts positively in society. People in society also change behaviour to look at mathematics teachers and mathematics. The teachers whose performances are well appreciated by students' receive better response from the community too.

This study indicated a situation of mismatch between the teaching strategies of teachers and the preferred learning strategies of students. The teachers are found indifferent towards the interest and personal life of students. Thus, a mismatch between teachers' teaching strategies and students' learning strategies in Nepalese mathematics classes has not contributed much to the promotion of students' learning. Nepalese classrooms are recognized as full of diversity and complexity due to ethnicity, gender, culture, language abilities, and interests of students. Similarly, expectations of parents and social responsibility also are essential. If a teacher is not competent in subject matter and not student-friendly, the students cannot learn mathematics well. Teachers and students should have a negotiation in classroom teaching and learning. But sometimes there is a problem in negotiation due to poor students and untrained and unprepared teachers (Panthi and Belbase, 2017) which results in students' poor performance and ultimately creates tension among teachers, students, parents, and school as a whole. This tension may generate a negative impact on society. So, the teacher has a significant role to address students' interest, ability, and parents' concerns through proper teaching strategies.

Implications

As teaching strategies and assessment methods employed by mathematics teachers are to be congruent with students' learning preferences, teachers' teaching strategies and students' learning strategies are to be matched to make the learning of students more meaningful. Therefore, teachers are further expected to try to understand the learning strategies of different groups of students as reflected in their dealing with mathematical problems. Similarly, teachers can improve methodologies that take into consideration individual differences of students, and promote self-regulated learning. Teachers are to be aware of all the mathematics learning strategies and factors affecting them and prepare their lesson plans accordingly. As Green and Oxford (1995) state, "The more the teachers know such factors, the more readily they are familiar with the nature of

individual differences among students. This sort of teacher's knowledge is power – the power to plan lessons so that students with many different characteristics, including varied strategies, can receive what they need" (p. 292). By doing this, teachers have an opportunity to reflect on their teaching styles and strategies and see if they need to make adjustments. It is therefore implicative that teachers address the issue of diversity of learning strategies in mathematics class as demonstrated by the students from different backgrounds.

Student-centred approach includes informal and effective teaching methods like discovery method, problem-solving method, inquiry method, creative and critical method. Such methods can be used with an individual touch of students to prevent them from parroting learning. Teacher often works as a facilitator and is expected to be conscious in setting high expectations for the students for developing their confidence towards success. Building on what the students already know and focusing on the structure and pace of learning makes learning tasks both enjoyable and challenging. Developing passion for learning, making individuals as active partners in their learning, developing learning skills and personal qualities for better result can directly contribute to students' learning strategies.

Meanwhile, the impact of teaching and learning strategies of teachers work to establish a positive image of teachers in society, as students spread that in the community. Teachers must work from students' strengths and interests by finding out why students are in the class and what their expectations are. Therefore, it is essential to take into consideration students' needs and interests to focus instruction that applies to various groups of students with different levels of competence. Teaching strategies that do not empower students to develop their learning strategies hurt society.

Acknowledgment

This paper was presented in the 43rd Annual Conference of the International Group for the Psychology of Mathematics Education (PME43), held on 7-12 July 2019 at Pretoria, South Africa.

References

Brown, H. Douglas. (1994). *Principles of language learning and teaching*. Englewood Cliffs, NJ: Prentice-Hall.

Burton, Leone. (1999). *Learning mathematics: From hierarchies to network.* Routledge, Falmer.

Canfield, Albert A. (1992). *Canfield learning styles inventory (LSI) manual.* Los Angeles: Western Psychological Services.

Cangelosi, James S. (1996). *Teaching mathematics in secondary and middle school: An interactive approach* (2nd ed.). NJ: Prentice Hall, Inc.

Chan, David.W. (2001). Learning styles of gifted and non-gifted secondary students in Hong-

Kong. *Gifted Children Quarterly*, *45*(1), pp. 35-44.

Coolahan, John. (2002). *Teacher education and the teaching career in an era of lifelong learning*. OECD Education Working Papers, No. 2, OECD Publishing. doi:10.1787/226408628504.

Creswell, John W. (2014). *Research design: Qualitative, quantitative, and mixed methods approach*. New Delhi: SAGE Publications India Pvt. Ltd.

Doolan, Laura Shea, and Honigsfeld, Andrea. (2000). *Illuminating the new standard with learning styles: Striking a perfect match.* Clearing House, *73*(5), pp. 274-78.

Dunn, Rita. (1995). *Strategies for educating diverse learners.* Bloomington, IN: Phi Delta Kappan.

Education Review Office. (2019). *National assessment of student achievement 2018 (Mathematics and Nepali for Grade 5).* Sanothimi, Bhaktapur: Author.

Ericksen, Stanford. C. (1978). *The lecture*. Memo to the Faculty, no. 60. Ann Arbor: Center for Research on Teaching and Learning, University of Michigan.

Felder, Richard M., and Silverman, Linda K. (1998). Learning and teaching styles in engineering education. *Engineering Education, 78*, pp. 674-81.

Green, John M. and R.L. Oxford, Rebecca L. (1995). A closer look at learning strategies, L2 proficiency, and gender. *TESOL Quarterly, 29*(2), pp. 261-97. http://dx.doi.org/10.2307/3587625.

Homans, George C. (1958). Social behavior as an exchange. *American Journal of Sociology*, *63*, pp. 597-606.

Keefe, James W. (1979). *Learning style overview: Student learning styles.* Reston, VA: NASSP.

Khanal, Bishnu. (2011). *Students' perception of teaching styles and use of learning strategies*. Unpublished M.Phil. Thesis. Faculty of Education, Tribhuvan University, Kathmandu.

Khanal, Bishnu. (2015). *Learning strategies of mathematics students*. Doctoral dissertation. Faculty of Education, Tribhuvan University, Kathmandu.

Khanal, Bishnu. (2016). *Teaching style preference of Nepalese mathematics educators*. Mini-Research Report. Mahendra Ratna Campus, Tribhuvan University, Kathmandu.

Lawrence, Gordon. (1993). *People types and tiger stripes: A practical guide to learning styles,* (3rd ed.). Gainesville, FL: Center for Applications of Psychological Type.

National Council of Teachers of Mathematics (1989). *Curriculum and evaluation standards for school mathematics.* Reston, VA: The Author.

Panthi, Ram Krishna., and Belbase, Sashidhar (2017). Teaching and learning issues in mathematics in the context of Nepal. *European Journal of Educational and Social Sciences, 2*(1), pp. 1-27.

Pewewardy, Cornel. (2002). Learning styles of American Indian/Alaska Native students: A review of the literature and implications for practice. *Journal of American Indian Education, 41*(3), pp. 22-56.

Pintrich, Paul R., and Schunk, Dale H. (2002). *Motivation in education: Theory, research and applications*. Englewood Cliffs, NJ: Prentice-Hall Merrill.

Protheroe, Nancy; and Clarke, Suzanne. (2008). Learning strategies as a key to student success. *Principal, 88*(2), pp. 33-37.

Schmeck, Ronald Ray (Ed.). (1988). *Learning strategies and learning styles.* New York: Plenum Press.

Smith, Linda H., and Renzulli. Joseph S. (1984). Learning style preferences: A practical approach for classroom Teachers. *Theory into Practice, 23*, pp. 44-50. Retrieved from http://dx.doi.or1080/00405848409543088g/10.

Wallace, Bill; and Oxford, Rebecca L. (1992). Disparity in learning styles and teaching styles in the ESL classroom: Does this mean war? *AMTESOL Journal, 1*, pp. 45-68.

Assessment in Technology-Mediated Education

✍ Ambika Prasad Poudel

Lecturer, Dhankuta M. Campus, Dhankuta

Abstract

Assessment is one of the key components of any educational programme. It is a continuous process for determining knowledge and competencies of learners with an aim of making improvement in their current learning status. In recent decades, the spread of the integration of technological tools in education has transformed the landscape of assessment practices. In this regard, this article attempts to explore some useful digital tools and methods of using them for assessing students' knowledge and skills in technology-mediated education. This study adopted evidence-based approach and 'research synthesis' methods which integrated the analysis of various studies through a comprehensive review of related literature. It has been concluded in the study that there are several digital tools useful for the assessment of different learning domains, but their productive integration in technology-enhanced education requires a careful selection and design of assessment methods. The study is expected to develop some cognizance of the concerned individuals for the betterment of current assessment practices in technology-integrated education.

Key Words: Assessment, digital technology, portfolio, critical thinking skill

Introduction: Assessment

Teaching, learning, and assessment are inter-related core components that lie at the heart of education. Assessment, among these components, is a continuous process for evaluating the performance and attainment of knowledge or skills of learners (Brown, 2004; Erstad, 2008). Bakerson and the associates (2015, p. 4) opine that assessment is the systematic process of documenting learning to measure knowledge, dispositions, or beliefs with an aim to improve all aspects of student learning. Similarly, Wall and others (2014, p. 6) define assessment as "a set of activities that seeks to gather systematic evidence to determine the worth and value of things." Thus, assessment can be understood as the process of collecting, reviewing and using data, for the purpose of improvement in the current performance. It is diagnostic in nature as it tends to identify the areas of improvement. Assessment provides feedback on performance and ways to enhance performance in the future.

Bakerson and others (2015, p. 9) discuss two main types of assessment – formative and summative. The main difference between these two is that the former is a continuous process that takes place

throughout the learning activities, while the latter happens at the end of learning sequence. Formative assessment is designed to assist learning processes by providing feedback to learners, which can be used to identify the strengths and weakness and hence improve future performance. Therefore, formative assessment is appropriate where the results are to be used internally by those involved in the learning process. It does not form part of the student's final grade/mark; rather, it provides constructive feedback to improve learning and understanding. Thus, the product of formative assessment may never be quantifiably recorded on a grade sheet.

On the contrary, summative assessment is used primarily to make decisions for grading or determine readiness for upgrading. Typically, it occurs at the end of an educational activity and is designed to judge the learner's overall performance. In addition to providing the basis for grade assignment, it is used to communicate students' abilities to the external stakeholders, e.g., administrators and employers. Summative assessment is usually conducted in the last few weeks of the term (or academic session) to see how well students have learned what they were supposed to have learned. The results from these assessments are aggregated and used to determine whether a student has fulfilled the specified learning outcomes and may achieve some kind of accreditation. Therefore, summative assessment usually causes a degree of anxiety since the grades received in summative assessments are final and can affect their future prospects (Bakerson et al., 2015).

With the innovation of web-based technologies and their integration in online education, several issues regarding the concept, goal, and methods of assessment have been raised by the educators at present (Mehdiabadi and Huang, 2018; Erstad, 2008). Many of the traditional methods of assessment are supposed to be inappropriate; and several methods and tools of assessment for technology-mediated education are being innovated. However, in the context of Nepal, there is high dependence on summative evaluation; and there has been slow progress in the evaluation and examination systems so as to discourage memorization and give emphasis on strengthening analytical skills of the learners (MOE, 2016). Moreover, since the use of information and communication technologies (ICTs) is still at its infancy in the developing countries like Nepal (UN, 2003); many of the stakeholders have little ideas and often have doubts and confusions about online education, and the tools and methods of assessment in technology-based learning environment. Therefore, this article makes an attempt to clarify some of the relevant issues related to methods and procedures of assessments in technology-enhanced education. Particularly, the relationship between learning and assessment, pedagogical shifts in the assessment practice, and tools and methods of assessment have been discussed for their better conceptualization. The main research concern raised in this study was the exploration of useful tools and methods of assessment in technology-mediated education for the evaluation of students' knowledge and competencies.

Methodology

This article adopts evidence-based approach, and 'research synthesis', often called 'systematic review' as the method of study. Systematic reviews (SRs), according to Lame (2019, p. 1) are "a way of synthesizing scientific evidence to answer a particular research question in a way that is transparent and reproducible". Likewise, Cooper and others and(2019, p. 6) opine that research synthesis is a broad array of integrative activities that attempts to integrate research studies for creating generalizations from both quantitative and qualitative research works. Emphasizing the importance of SRs, research scholars opine that single studies taken in isolation are often seriously misleading, and that synthesis of the results of multiple studies provide better information than the results of a single study (Petticrew and Roberts, 2006, p. vi; Littell, 2006 p. 1). The main steps in research synthesis methods are: formulating the research problem, searching literature, gathering information from studies, evaluating quality of studies, analyzing and interpreting the results (Cooper and othersand, 2019).

Unlike single studies, systematic reviews are a method of advancing knowledge by making sense of a large body of information. Systematic reviews enable the researhers to get into conclusion through comprehensive literature review (Tranfield and others, and2003). In this study, related previous literature (such as Russell, 2020; Liu, 2015; Wang, 2011; Conrad and Openo, 2018; Bonanno, 2015; Dede, 2010; Bajzek and others, 2008; Morgan and others, 2004; Erstad, 2008; Bakerson and others, 2015; Wall and others, 2014and; Mehdiabadi, and Huang, 2018; European Commission, 2012) have been reviewed to analyze and synthesize available books, journal articles, conference papers consulting Internet and search engines, and physical library. The research works of various scholars as mentioned above have been synthesized to elaborate the concepts of the related issues of the study, and their findings have been interpreted. Besides, the researcher has also incorporated his more than two decades' long personal experiences of teaching at college level to get into conclusion.

Discussion

The main concern of this study was to add clarity in the practice of assessment in technology-based education by exploring the appropriate and useful tools and methods of assessment and evaluation. In this section, the main issues relevant to assessment in technology-mediated education have been explained based on the synthesis of previous literature. Particularly, assessment and learning, pedagogical shifts in assessment methods, and the methods and digital technological tools for online assessment have been discussed in the sub-headings that follow.

Learning and assessment

In different schools of learning theories, the relationship between learning and assessment has been described differently. Discussing such learning theories, Erstad (2008) claims that in behaviorist tradition, learners are considered to be the passive receivers of knowledge, and the assessment of their 'performance is based on certain pre-defined measurements of their responses. On the other hand, in the constructivists' practice, learners are believed to be more active cognitively; and the assessment is based on their performance of a problem-solving task. Likewise, the socio-cultural tradition gives emphasis on the interaction and collaboration between or among learners rather than on their individual cognitive processes, and the assessment is based on the demonstration of the application of their knowledge and skills (ibid.).

Morgan and others and'(2004, p. 15) discuss two types of learning approaches – surface approach and deep approach; and they view that assessment tasks depend on the objectives of learning approaches. They opine that in surface learning, the assessment tasks such as simple memorizing, naming, and recalling are appropriate while deep learning requires higher order thinking activities such as analyzing, examining, synthesizing and applying.

In this way, assessment tasks need to be aligned closely with the teaching and learning activities and desired learning outcomes. Teachers and instructors need to take into account the objectives of learning, selection of available assessment tools, and designing the tasks of assessment.

Pedagogical shift in assessment

At present, the increased innovation and implementation of several digital technologies, and the students' attraction towards e-learning instead of face to face (F2F) learning, has raised various new issues in the educational goals and in the ways of assessment practiced so far. Mehdiabadi and Huang (2018) opine that integration of ICTs and Internet in the educational system has changed the landscape of higher education, and the form of content delivery. They claim that such integration has caused not only to review the educational goals, contents to deliver, and the methods of teaching and learning; but also to revise the tools, methods, and techniques of assessment. In the same line, Russell (2020) views that the interaction of learners with digital tools has provided several opportunities to assess their cognitive and non-cognitive development. Regarding this context, the traditional paper-pencil based assessment is not suitable to assess the performance of the students who are no longer in the classroom. Discussing the recent changes and challenges in the education and assessment system, European Commission (EC) (2012) writes:

> *Assessment is one of the most powerful influences on teaching and learning, but it tends to put too much emphasis on subject knowledge, and less on skills and attitudes,*

> *and to neglect altogether the increasingly important cross-curricular competencies such as learning to learn or entrepreneurship. Progress has to be made on assessment approaches to take into account all competences needed for the 21st century. (EU, 2012, p. 3)*

Thus, it has been essential to reconceptualize and adapt the traditional assessment practices to suit contemporary modality of learning and delivering contents using digital technologies. With regard to such issues of educational change, ICT literacy, development of learners' higher order thinking skills, critical thinking, lifelong learning skills, and assessment of such skills have become more relevant educational goals in the recent decades (Liu, 2015). Likewise, computer-based modality of assessment has become more effective than the traditional paper-pencil-based modality to address the needs and requisites of newly developed educational changes (Erstad, 2008).

Morgan and others (2004) view that the attraction of the learners in higher education towards distance and online teaching and learning has been increasing for some decades now. There are mainly two reasons behind such attraction (p. 40):

i. The learners in higher education need to work to support their study; and many of them are not geographically close to college/university. So, they prefer online and distance learning modality rather than F2F; and
ii. The traditional teacher centered methods of delivering contents are outmoded because they focus on coverage of contents rather than engaging the learners in authentic learning experiences.

According to Morgan and others (2004), the traditional methods of assessment are not appropriate for assessing the required knowledge and skills of the students who are in distance geographically, and who are compelled to earn an income to support themselves. They suggest a flexible modality for the assessment of such students who are involved in online and distance delivery mode of teaching and learning. The flexible modality of assessment refers to the assessment practices that take into account different circumstances and experiences of students; and it allows a choice in how they are able to demonstrate performance on an assessment task.

As mentioned above, adult learners and those studying in higher education are attracted more towards online education because in technology mediated education the learners can advance their education while taking care of their family or maintaining their full-time job. Moreover, unlike the traditional modality, online modality provides greater possibilities for interaction and collaboration which provide the learners with several opportunities to learn knowledge and skills, and to have their knowledge and skills assessed as well. The traditional modality of assessment

is limited particularly to exams, while in online assessment several alternative methods such as self-assessment, peer-assessment, projects or portfolios can be integrated (Liu, 2015).

Though assessment is vital to any educational programme, it is obligatory in online learning modality because there are comparatively greater challenges and threats such as reliability and validity (Bakerson and others, 2015). The difficulty in online assessment include the issues such as cost, equivalence of test forms, security, diversity of school cultures, infrastructural environment, and digital literacy. Likewise, workload to the teachers, authentication of learners' submitted work, plagiarism are some other challenges. In addition, there are also several threats such as identification of the students as the examinee, plagiarism, and possibility of cheating by the students while tests are taking place.

Therefore, online and flexible assessment requires much rigor on the part of the teachers. To improve assessment mentioned in the contexts above, Bakerson and others (ibid.) suggest that the risks of cheating can be minimized by using exams related to testing students' higher order thinking skills, which require well-developed answers. Likewise, to reduce the risk of students' identity, asynchronous meetings and live sessions with the examinee can be organized. Similarly, to control plagiarism, plagiarism checker such as turnitin.com can be used. Likewise, Morgan and others (2004, p. 39) suggest that teachers need to think carefully about: (i) the ways to create different assessment opportunities, (ii) the pedagogies to support assessments, and (iii) the ways to transform the traditional models of assessment. Likewise, in designing the assessment tasks, teachers and instructors need to be careful:

i. to increase active engagement of learners;
ii. to bring relevant real-life situations into use;
iii. to facilitate problem-solving tasks and collaborative activities;
iv. to activate learners working with microworld; and
v. to include representations from multiple modalities (Alexander and McKenzie, 1998, p. 6)

There are several benefits of online assessment in technology-mediated education. Such assessments make the tasks of the teacher such as tracking, monitoring, and documenting students' activities easier and automatic, and that they provide the students with self-paced task related contents and course materials (Comeaux, 2005). However, online assessment is often criticized to be lacking rigor. For more effective assessment, Morgan and others (2004, p. 37) suggest three important techniques to be considered by the teachers:

i. Early communication: Online learners get less opportunities to have their errors diagnosed effectively during some early months of their session until they submit their first assessment.

They have to depend on synchronous and asynchronous communication, not face to face communication. In such context, there might be some difficulties in meaning negotiation. Therefore, students need frequent communication and timely support in performing the assessment tasks.

ii. Interwoven formative and summative tasks: Both formative and summative components of the assessment tasks should be interwoven with appropriate spacing to provide the learners with progressive feedback and to build confidence of the learners. The level of difficulty of each next task should be based on the previous ones.

ii. Appropriate tasks: Assessment tasks should meet the needs of the learners in such a way that they encourage them to apply what they have learnt into relevant problem-based tasks. The tasks need to develop the learners' self-directed learning and self-assessment.

In this way, integration of digital tools in education has transformed the landscape of educational goals, pedagogical approach, and assessment practices. Thus, the teachers and educators must be updated to be aware of the appropriate methods and strategies of assessment to adapt themselves in the newly developed educational context.

ICTs for formative and summative assessment

One of the main differences between online assessment and traditional assessment is that in case of the former one, learners are not isolated from their colleagues even in the school-off time. The advantage in online assessment is that there are several opportunities for the teacher and the peers to provide the learners with comments and feedback with the help of ICT tools. These opportunities can be better scaffoldings to receive constructive feedback for further improvement in their performance.

ICTs can contribute to improvement of assessment and make adaptive to the various needs of online learning. They can be used for processing large number of tests. Moreover, the introduction of ICTs in education can contribute to formative ways of assessment by improving the process of monitoring and students' progress. ICTs can better support project work methods, and bring qualities in portfolio assessments with the possibilities of sharing e-files, creating hypertexts, and multimodality of written texts such as animation and moving images (Conrad and Openo, 2018; Erstad, 2008).

More importantly, web-based technologies and ICTs can be more effective for computer-supported collaborative learning (CSCL) (Wang, 2011). They increase the opportunities of interaction between/among learners, and help in exchanging their ideas and advancing meaning negotiation. Additionally, such tools and technologies can be more useful for learning problem solving skills and critical thinking skills, and make problem-solving tasks easier. These technologies have

capacity to enhance learning and assessment because they give rise to the potentialities of sharing information and resources and enriching networking with peers and the teachers (Liu, 2015). In this way, ICTs can be better supportive for web-based peer assessment, an innovative assessment method. Likewise, they can be used in the assessment practices in order to assess the higher order thinking skills, which are difficult to assess by paper and pencil modality of assessment (ibid.). Thus, assessment of ICT literacy is also considered more important which includes the skills of the individuals such as communicating, assessing, managing and evaluating information, and developing new understanding (Erstad, 2008).

ICTs can make communication faster, easier, and more enjoyable. With the use of ICTs, it is possible to provide the learners with richer and more immediate feedback in formative assessment (Bajzek et al. 2008, p. 1). In online environment, the learners can take benefits using the tools such as auto-graded quizzes, discussion forums, automated pooled question banks, and timed online tests. The new technologies can advance the potential for assessment, the rate of timely feedback, networking of the learners. In this way, ICTs can make the regimes of assessment easier to administer.

ICTs enable the teachers to organize blended modality of teaching by mixing both F2F and online programme and summative assessments. In online mode, the skills of students such as online resource management, graphical and hypertextual presentation, interaction, and collaboration can be assessed using new technologies (Morgan et al., 2004; Bakerson et al., 2015). Students' performance can be evaluated through both synchronous and asynchronous modes of assessment. For assessing communication skills of the students, group chat activities, collaboration and online problem-solving activities, student intranet activities, video talk activities etc. can be evaluated in their use of the tools such as email, discussion forum, chat, skype. Likewise, the students' skills of accessing and managing information can be assessed observing their process of seeking, finding and handling information and resources using websites and search engines. Similarly, to assess the students' knowledge and understanding, quizzes, multiple choice items, matching answers, true false questions, short answer questions, etc. can be used through computer assisted assessment (CAA) and the programmes such as self-paced module and automated tutor. In the same way, students' creativity and critical thinking skills can be assessed by evaluating their activities such as project works, portfolios, critical reflection writing, essay and report writing, and online debates using technological tools (ibid.).

Methods for online learning assessment

Online education is becoming popular in higher education at present. Similar to several other modalities, assessment in online learning can influence the depth and strategy of learning, and the

way the students manage their study time. According to Boud (1995), students can escape bad teaching, but they cannot escape bad assessment. Therefore, in any of the course design of the educational programme, assessment is acknowledged as an important fundamental component.

According to EU (2012), technology-based assessment methods that need to be embedded in educational practice are still at elementary stage. It is suggested that the methods of assessment need to be adapted considering several learning processes that arise from different pedagogical approaches such as didactical, constructivist, constructionist, and connectivist approach (Bonanno, 2015, p. 42). Dede (2010) views that assessment in technology-based learning environment need to be integrated to promote 21st century skills and competencies that include: (i) learning and innovation skills such as critical thinking, digital communication, collaboration and creativity; (ii) life and career skills such as flexibility and adaptability, self-direction, social and cross-cultural skills, responsibility and leadership skills; and (iii) information, media and technology skills. Therefore, the assessment of technology mediated learning requires a more integrative approach.

Various methods can be used for assessing the learners' knowledge and skills in online learning. In a research investigation, Liu (2015) found 20 different categories of the methods of assessment the instructors used in five different master's programmes, viz. Language Education, Adult Education, Nursing, Business Administration, and Instructional Design and Technology while teaching different online courses. Those methods and their brief procedures have been summarized below:

1. *Participation in asynchronous discussions:* Students are required to participate in activities associated with asynchronous discussion forums.
2. *Critique*: Students are required to analyze and evaluate objects that are physically visible.
3. *Projects*: Students are encouraged to choose topics in which they are interested for the assessment of students' application of knowledge and skills in the real world.
4. *Essays*: Essay allows the instructor to assess the students' understanding and/or ability to analyze and synthesize information.
5. *Field reports*: Students are asked to do some real-world work and report what they have found.
6. *Reflections*: Students are asked to reflect on their skills, what they have learned, or their learning process.
7. *Quizzes and exams*: There is at least one item in the format of multiple-choice questions.
8. *Students create questions or design activities*: Students are asked to create questions for discussion or exams, or design activities for the class.
9. *Case analysis*: Students are asked to analyze a case/scenario.

10. *Questions-answers*: The instructor provides a list of questions for students to answer.
11. *Collecting information and resources*: Students are asked to report on relevant information or resources they collected.
12. *Inventory*: Students are asked to complete relevant commercial or non-commercial inventories to self-test their knowledge and skills.
13. *Reading and summarizing*: Students are asked to read articles and write summaries of the articles.
14. *Concept mapping*: Students are asked to describe their understandings of relevant concepts with concept maps.
15. *Learning contracts*: Students are asked to establish a learning contract with the instructor regarding the goals they want to achieve.
16. *Portfolio*: Students are asked to collect evidence to show their learning and progress.
17. *Participation in asynchronous discussions*: Students are asked to participate in activities other than synchronous discussions.
18. *PowerPoint presentations*: Students are asked to use PPTs to present their understanding of certain knowledge.
19. *Critique log*: Students are asked to record critiques and feedback that they received, and changes that they have or have not made.
20. *Peer editing*: Students are asked to edit each other's work.

Bonanno (2015, p. 44) proposes a process-oriented model for assessment in technology-enhanced learning. This model integrates both product and process, i.e., 'assessment of' and 'assessment for' technology-mediated learning. It organizes interactions across three pedagogical levels: acquisition level, participatory/collaborative level, and contribution level. Those pedagogical levels and dimensions of interactions have been summarized in Table 1.

Table 1: Assessment in technology-mediated learning

S. N.	Pedagogical Level	Dimensions of Interaction	
		Domain	**Assessment of technology use**
01	Acquisition: Learning by instruction and exploration	Assessment of acquired knowledge and skills – typically assessed by a teacher or more experienced learner	Assessment of knowledge and skills in the use of computer-based online tools specifically designed for developing tests or quizzes such as WebQuests, e-portfolios, and interactions profiles.

S. N.	Pedagogical Level	Dimensions of Interaction	
		Domain	**Assessment of technology use**
02	Participation: Learning by collaboration and sharing	Assessment of interactions in dedicated online spaces in relation to domain knowledge and skills – typically assessed through peer evaluation	Assessment of collaborative use of tools for communication, group management, and sharing; analysis of individual or group reflections captured in knowledge-sharing tools such as, blogs, or wikis, Edmono; video-based online conferencing tools such as Skype, Imo, Livestream; and ePortfolios, and individual and group interaction profiles
03	Contribution: Learning by designing and reflection	Assessment for designing, developing, and evaluating the learning activities related to domain knowledge and skills – typically assessed through personalized knowledge and competence-sharing tools like ePortfolios	Assessment of the application of tools developed for mediating others' learning and for knowledge building and sharing; and analyzing e-portfolios using the tools such as LiveText and Google sites

[Adapted from Bonanno (2015, p. 44)]

In this model, assessment of the activities at different pedagogical levels (i.e., acquisition, collaboration, and contribution), learning domains, and use of technology are taken into consideration to be integrated. The learner's activities in three different pedagogical levels are assessed considering their type and frequency of interaction. Likewise, learning domains are categorized according to analysis of content or task, and are assessed considering their hierarchy of learning outcomes. In the same way, the surface structure (i.e., interface layout and navigation of the digital tools) and deep structure (i.e., interaction mediated by the tools with people and objects) of the use of digital technology is assessed in relation to the learner' s use of the tools in acquisition of knowledge, participation and collaboration, and contribution.

Some important principles of good methods of assessment are that they should be diverse and ongoing, and they should monitor both the process and product of students' learning (Liu, 2015). Likewise, they should be explicit regarding their objectives, requirements, and grading criteria. They should also be authentic and helpful for the students to apply their knowledge and skills in the real-world experiences. The assessment tasks must stress higher order thinking skills of the students such as synthesis, analysis, and critical thinking (Dede, 2010).

Technological tools for online learning assessment

Digital technologies have brought several revolutionary changes in education system in the way of acquiring, creating, and sharing knowledge. They have facilitated using new ways in making communication and interaction, participation and collaboration, and life-long learning. Several technologies can be used to assist and enhance students' engagement in learning and to determine whether and how well the students are learning. Bakerson and others (2015, p. 9) have discussed six categories of such technological tools used in online learning environment. Some of the most useful technological tools and their use in assessment tasks have been discussed in the following points:

(a) Learning management system (LMS) tools: Tools of this kind such as Moodle (www.moodle.com), Canvas (www.instructure.com), Blackboard (www.blackboard.com), Sakai (www.sakaiproject.org), can be used to create and deliver contents, tests, and quizzes of several types. The learners need to study the contents delivered and complete the given tests and quizzes to step into the next test, which help the teacher to verify the students' understanding, knowledge and skills.

(b) Rubric generator tools: The rubric generator tools such as Rubister (www.rubister.4teacher.org), Roobrix (www.roobrix.com), Technology (www.technology.com), can be used to provide the students with the criteria for learning. Such tools help the teachers generate learning objectives and assignments to grade the learners' performance and understanding.

(c) Online authoring tools: The online authoring technological tools such as Course Lab (www.courselab.com), SoftChalk (www.softchalk.com), Udemy (www.udemy.com) help the teachers to create lessons, or course packages. The teachers can use the tools for providing the students with assignments, quizzes, and other tasks to assess the students' learning.

(d) Discussion and collaboration tools: The tools such as Blogger (www.blogger.com), Wikispaces (www.wikispace.com), Livestream (www.livestream.com), google+ (www.plus.google.com) can help the teachers to check the students' level of learning that is taking place, and provide them with feedback. The teacher can assess the students' participation, interaction, creativity, and knowledge sharing with their peers to complete the given task or project.

(e) Online response system tools: The tools such Socrative (www.socrative.com), QuestionPress (www.questionpress.com), Poll Everywhere (www.polleverywhere.com) can be used to help the teachers to determine whether the students have learned. Teachers can assess the students' knowledge and understanding through a poll, survey, quick quiz etc.

(f) Student feedback tools: The feedback providing tools such as Turnitin (www.turnitin.com), Live Text (www.livetext.com), and Google Docs (www.docs.google.com), can be used to

offer the students with immediate feedback on their writing proficiency. The teachers can assess the students' performance on spelling, grammar, and other mechanics of writing and provide constructive feedback.

Thus, in a nutshell, several digital tools can be integrated in technology-mediated education for content delivery and assessment of the students' knowledge and performance. Teachers and educators need to take right decision to select the right tools for the assessment of right skills or competencies of students.

Conclusion

Assessment is an integral part of any educational programme. The innovation and spread of digital tools and technologies, and their integration in technology-based education has raised some issues regarding the predetermined goals of education and methods of assessment. At present, the need for identifying best assessment practices, and careful design of assessment integrating various technological tools to address the 21st century competencies have been the demands of the pedagogical shifts in educational assessment. Therefore, the stakeholders need to develop their understanding about assessment to identify new tools, methods, and strategies of assessment for the betterment of evaluation system in technology-mediated education.

Contribution to Knowledge

The integration of technology in education has raised several issues and challenges in the traditional knowledge-oriented paper-pencil-based modality of assessment. To address such issues of assessing learners' higher order thinking skills and problem-solving skills in technology-enhanced education, several tools and methods useful to be employed in the newly developed educational context have been discussed in this research article. Thus, this study is expected to add clarity regarding the tools and methods of assessment and evaluation; and develop some cognizance of the concerned individuals for the betterment of assessment practice in technology-mediated education.

References

Alexander, S.; and McKenzie, J. (1998). *An Evaluation of information technology projects for university learning*. Canberra, Australia: Australian Government Publishing Service.

Bajzek, Diana; Brooks, Judy; Jerome, William; Lovett, Marsha; Rinderle, John; Rule, Gordon; and Thille, Candace. (2008). Assessment and instruction: Two sides of the same coin. In C.J. Bonk; M.M. Lee; and T. Reynolds (Eds.). *Proceedings of world conference on e-learning in corporate, government, healthcare, and higher education 2008*. (pp. 560-65).

Chesapeake, VA: AACE. Retrieved from http://www.editlib.org/p/29661.

Bakerson, Michelle; Trottier, Tracey; and Mansfield, Malinda. (2015). The value of embedded formative assessment: An integral process in online learning environments implemented through advances in technology. In S. Koc, X. Liu, and P. Wachira (Eds). *Assessment in Online and blended learning environments* (pp. 3-20). USA: Information age publishing.

Bonanno, Philip. (2015). Assessing technology-enhanced learning: A process-oriented approach. In S. Koc, X. Liu, and P. Wachira (Eds). *Assessment in online and blended learning environments* (pp.39-53). USA: Information age publishing.

Boud, David. (1995). *Enhancing learning through self-assessment*. London: Kogan Page.

Brown, H. Douglas. (2004). *Language assessment principles and classroom practices*. New York: Longman.

Comeaux, Patricia (Ed.). (2005). *Assessing online learning.* Boston, MA: Anker Publishing.

Conrad, Dianne; and Openo, Jason. (2018). *Assessment strategies for online learning*. Canada: AUpress.

Cooper, Harris; Hedges, Larry V.; and Valentine, Jeffrey C. (Eds) (2019). *Handbook of research synthesis and meta-analysis*, 3rd edition. New York: Russell Sage Foundation.

Dede, Chris. (2010). Technological supports for acquiring 21st century skills. In E. Baker, B. McGaw, and P. Peterson (Eds.). *International encyclopedia of education* (3rd ed., pp. 158-166). Oxford, UK: Elsevier.

Erstad, Ola. (2008). Changing assessment practices and the role of IT. In J. Voogt and G. Knezek (Eds), *International handbook of informational technology in primary and secondary education* (pp.181-94). New York: Springer.

European Commission [EC]. (2012). *Assessment of key competences in initial education and training: Policy guidance. Accompanying the communication from the Commission on Rethinking Education: Investing in skills for better socio-economic outcomes.* Strasbourg, France: Author.

Lame, Guillaume. (2019). "Systematic literature reviews: An introduction", in *Proceedings of the 22nd International Conference on Engineering Design (ICED19),* Delft, The Netherlands, 5-8 August 2019. DOI:10.1017/dsi.2019.169

Littell, Julia H. (2006). Systematic reviews in the social sciences: A review. *Evidence and Policy, 2*(4). (pp. 535-37). doi:10.1332/ 174426406778881728

Liu, Shijuaan. (2015). Assessment methods in online graduate courses. In S. Koc, X. Liu, and P. Wachira (Eds). *Assessment in online and blended learning environments* (pp.77-101). USA: Information age publishing.

Mehdiabadi, Amir Hedayati; and Huang, Wenhao David. (2018). Evaluation and assessment in an online setting. In C. Secolsky and D.B. Denison (Eds), *Handbook on measurement*

assessment, and evaluation in higher education (pp. 829-41). New York: Routledge.

Ministry of Education [MOE]. (2016). *School sector development plan*. Kathmandu: Author.

Morgan, Chris; Dunn, Lee; Parry, Sharan; and O'Reilly, Meg. (2004). *The student assessment handbook*. New York: Routledge.

Petticrew, Mark; and Roberts, Helen. (2006). *Systematic review in social sciences: A practical guide.* USA: Blackwell Publishing.

Russell, Michael. (2020). Digital technologies supporting and advancing assessment practices in the classroom. In S.M. Brookhart and J.H. McMillan (Eds). *Classroom assessment and educational measurement* (pp. 224-42). New York: Routledge, Taylor and Francis Group.

Tranfield, David; Denyer, David; and Smart, Palminder. (2003). Towards a methodology for developing evidence-informed management knowledge by means of systematic review. *British Journal of Management, 14*(3), pp. 207-22.

United Nations [UN] (2003). *ICT development indices: United Nations conference on trade and development.* New York: UN publication.

Wall, Andre F.; Hursh, David; and Rodgers, Joseph W. (2014). Assessment for whom: Repositioning higher education assessment as an ethical and value-focused social practice. *Research and Practice in Assessment*, *9*(1), pp. 5-13.

Wang, Shuyan. (2011). Promoting student's online engagement with communication tools. *Journal of Educational Technology Development and Exchange, 4*(1), pp. 81-90.

Reforming School Level English Language Teaching through Formative Assessment Practices

✍ Dinesh Kumar Thapa

Visiting Faculty, Kathmandu University, School of Education)

Abstract

Assessment is an integral component of the teaching-learning. If implemented in a judicious and systematic manner, assessment reserves the power to improve the entire teaching-learning activities. However, using assessment only as a means to rank students makes it an isolated and meaningless activity in pedagogical terms. The common Nepalese practice of assessment involves testing students several times a year through formal tests with the primary goal to ranking them on merit. There is a rare use of the information collected through such tests to improve teaching-learning activities. Our common assessment practices suggest that we have not only been following faulty assessment measures, but such measures have also become isolated activities without having a link with the goal of improving teaching-learning. There are also issues of exam-dominated teaching culture and implementation of tests with low validity – which have significantly impended reforms in both assessment and teaching of English in Nepal. This paper examines the intricate relationship between instruction and assessment; and argues for reorienting our assessment practices towards making them continuous, formative and authentic. This also suggests for utilizing the assessment data to improve the overall context of teaching and learning English.

Understanding assessment

The term 'assessment' is derived in English from the word 'to assess', and from the Latin verb 'assidere', meaning 'to sit with' (Green, 1998) – implying a teacher is supposed to sit with the learners for something to do 'with' and 'for' the students. According to Harlen (1994), assessment in education is the process of gathering, interpreting, recording, and using information about pupils' responses to an educational task. Khaniya (2005) defines it as a process of scrutinizing how learners have learned what the teachers wish them to learn, and argues that assessment is an inherent part of instruction. The term 'testing' is used to refer to the 'instrument for measuring language ability' (Doglas, 2010, p. 3) and as a 'problem solving activity' (Hughes, 2003, p. 8) employing more sophisticated tools (Bachman, 1995, p. 353), whereas assessment is understood in terms of the procedural activities to collect evidences of students' learning. In this paper, the writer has used assessment as an inclusive term for the activities attempted to elicit information

about students' abilities in the English language.

Elucidating the issue

A couple of remarks presented below will highlight the issue I am going to deal with here in this paper.

> *Many students score low in English in the Secondary Education Examination (SEE). Upon my investigation, I found that most of those who scored poorly had never achieved good scores in English from the junior grades (grades 4-9). These students were always tested three times a year, formally 18 times in English; but the result was never used 'to make teaching' fit for them. Now the situation is such that we are measuring a plant but not helping to grow the plant.* (Informal communication with Teacher A)

> *Suresh is regular to school, attends school activities well, completes homework and is a disciplined student. Unfortunately, he faced sickness during the final exams, and scored lower than his other classmates. I feel that this one-shot test does not give a reliable information about the abilities of students.* (Informal communication with Teacher B)

> *Bimal is frequently absent in class. He is not much obedient either. But he is so lucky that he copied answers in the exam and secured good scores this year.* (Informal communication with Teacher C)

> *We have to complete all the project work and group work on time. Otherwise we cannot get marks. Every time we are ready to learn, not only in exam. It helps to improve not only language but also many other things.... We are happy that we do not need to take exam only. We get chance to talk with friends. Every day teachers ask us and check us. They make changes in teaching after that. All of us can study well.* (Informal communication with Student A)

> *I involved my students in a 'Giving a Talk' activity. At first, more than half of them in the class could not deliver satisfactorily. The speech of even those who could stand confidently facing the audience was highly interrupting, as they barely uttered a phrase at time and their speech sounded very unnatural. I minutely recorded the entire dimensions of their weaknesses, planned appropriate materials and activities, took two lessons engaging them in suitable tasks and modelling to them the way a talk is to be started, and concluded highlighting the content structure, quality of voice, body- features and the discourse makers. Next time, I found the very poorly performing students delivering an excellent talk.* (Informal communication, Teacher D)

These anecdotes elucidate the context of the mainstream assessment practices of English language teaching-learning in Nepal. They imply that our practices have become rather formalized events and that the outcomes are not truly representative of the language skills and abilities of students or their future learning needs. Last two anecdotes, though, imply that the practice of alternative and ongoing assessment is learning friendly in some cases in that it enhances students' engagement in learning while allowing for improvement in teaching-learning activities.

Assessment for learning and assessment of learning

'Assessment for learning' can be understood as the act of collecting data and evidence of the learners' performance so that their level of competency can be determined. This approach is directed towards creating an individual learning profile of the students in order to determine their level of achievement, proficiency, and difficulties they have in their journey of language development and to plan for required support. Norris (2012) states that the main objective of language assessment is to collect the evidence to plan for language support to build higher level of competence in students. This task requires teachers to collect data about students' progress and difficulties on a regular basis. As a result, they can decide whether the students are developing higher level competencies, whether they are able to follow the delivered lessons, and whether they need further support to reach the level of expectation. Planning for remedial lessons, differentiated instruction, and individualized support become possible through such formative orientation of assessments. This assessment approach is different from 'assessment of learning', which is focused on promoting the learners to further grades or selecting them for a particular purpose. When a teacher wishes to assess students in order to place them in a specific class or group, or to award them with certificates or merit- based scholarship, the focus then is on how much competence the learners have developed as a result of their involvement in learning. Such an assessment measure generally involves assessing the students at the end of a given period, such as the end of a term, or a year. Such a practice is aimed at awarding a grade, and the score that the learners receive becomes the only feedback for them. While results from such assessment can be useful to the teacher, they can be of limited value to the learners for their learning and development purposes. This orientation is summative in nature, and does not necessarily link to supporting the concerned students for meeting their learning needs. Thus, only the 'assessment-for- learning' orientation becomes useful both for the teachers and the students for reaching the expected targets.

Gap between curricular provisions and assessment practices

In practice, two factors are crucial for impeding reforms in assessment-for-learning in English language teaching in schools in the Nepalese context. The first one, which we can call the

'exam-culture' factor, is a lack of formative assessment practices with a complete separation of assessment and teaching-learning activities. The second one, which can also be understood as the 'test- validity' factor, concerns with the faulty practice of test design at the school level English language tests and a prolonged involvement of students with such faulty test items throughout their school education. Major policy documents and reports also substantiate this observation.

The National Curriculum Framework for School Education (Curriculum Development Centre, 2076) is the major policy document guiding the academic activities in school education in Nepal. Regarding the provision of assessment and evaluation, the framework underscores the need for both summative and formative assessment measures including practical activities (Curriculum Development Centre , 2076). The policy also stresses on the implementation of formative and remedial measures to assess students in the Basic level (grades 1-8) and focuses on the responsibilities of teachers to adopt the individual portfolio of students. For the secondary level, it has provisioned for dynamic and multiple measures of assessment in addition to the terminal tests. Prior to the framework, there was the policy of Continuous Assessment System (CAS) in place from 2009 (Ministry of Education , 2009). It was an initiative in line with the spirit of formative assessment and assessment for learning principles. However, the school based practice of CAS was not implemented in line with the spirit of its inception because of the misunderstanding of the concepts and processes of CAS and a dominant preference on the part of teachers for memorization of facts and summative measures of assessment (Acharya and Shiohata, 2014). Similar claim has been made in the School Sector Development Plan (SSDP), the overarching educational plan guiding school education in Nepal. The plan also mentions that testing has grappled the flexibility and innovation in the classrooms of Nepal as teachers mostly seem to be 'teaching for test' (Ministry of Education, 2016, p. 23). This practice is also believed to have posed a challenge for the improvement of teaching-learning activities in schools because of much dependence on summative tests administered by the bodies external to the school and teacher.

The foregoing discussion provides us with a paradoxical pedagogic situation that despite the policy of formative and continuous assessment, the common practice of assessing students' learning in Nepalese schools has been taking place through summative tests and exams. This paradox is also evident as per the SSDP, which aims to increase the quality of students' learning through improved relevance and enhanced quality of assessment measures. This plan also gives emphasis on formative assessment measures that are learner-focused as well as the summative tools that are skill focused (ibid., p. 15). However, despite having the primary aim to orientate the entire assessment practices from the assessment of learning to the assessment for learning, the plan reports that actual practice of assessment in all types of schools shows teachers teaching to test with an overwhelming dependence on summative tests as a replica of standardized and

national tests (p. 23). The plan, however, does argue for the need to improve and adapt teaching as per the assessment data (p. 10) so that the overall quality and learning achievement of students becomes more evidence based.

The assessment practices in the schools of Nepal also supports the claim that our assessment practice is dominated by paper-based tests for all school subjects at terminal intervals combined with a year-final test for decision making purpose. Students from as early as grade one sit in the exams for three-four times a year. Often, the test items are designed by the examination committees comprising a group of schools. Although the terminal tests are understood as a part of formative assessment, these tests do not show much relationship to the classroom practices back (Duwadi, 2018).

In English language tests, the test items comprise of reading and writing components coupled with discrete items of English grammar. The reading passages are followed by comprehension-check questions. As the test design is mostly dependent on the textbook contents, it is obvious that these tests lack the tasks that truly represent the competence indicators for reading skills as per the expected curricular objectives of the grade level. Although there seem multiple comprehension tasks, these are often repetitive in terms of the skills they attempt to elicit. We can observe that although the length and genre of the reading passages differ across grade levels, such test items seem similar in nature as most comprehension-check probes dominantly represent the skills of 'getting factual information'. As a result, students do not get the opportunity to practice and develop several foundation skills of reading that are to be developed as an independent readership upon the completion of school education. This observation is also evidenced as per the National Assessment of Students' Achievement (NASA) report which has assessed students' achievement at grades 3 and 5 against the indicators of curricular objectives (Education Review Office, 2015). Among the grade five students, the report found a fairly low level of achievement in reading (45.7 out of 100) and writing (40.2 out of 100) components in English (ibid.). The data testify that overdependence on summative tests has caused a serious problem regarding the way English should be taught and students should be assessed in the schools of Nepal.

Inadequate assessment practices

Our observation suggests that assessment practices in schools have more extra- academic values than contributing to improving teaching-learning activities. The periodic tests administered by schools seem to have impelled parents and students to manage the students' study more seriously whereby students would study more during the times of tests with better management of study facilities, study time, and other supports from the parents. Test results, however, are mostly used for grading students on merit list and for promoting them to senior classes. It means that the test

results are not linked directly to improving teaching-learning activities back in the classroom. In the tests of English, especially in the junior classes, test items are heavily dependent on the textbook contents and activities, which do not truly assess the underlying constructs and skills of learning English. This practice of testing is also unjust for those learners who are struggling to learn English because they do not get any remedial support on the skills and aspects they are lagging behind. Such testing practices neither address the learning that also goes out-of-the-classroom context nor do they follow a systematic process of test design with the specification of the constructs intended to be elicited. Teachers rarely collect evidence about the skills of literacy that are needed for comprehension, reading, and writing purposes. We also find that the test items hardly require the learners to involve in group and pair-based activities, additional reading materials, and projects or problems for supporting a communicative, interactive, and engaged learning of English. Such a practice, therefore, gives less believable, less authentic, less comprehensive results. In this respect, our assessment and reporting practices are partial and incomplete. Thus, the overall context of assessment practice of English language learning in our schools is in an academically pathetic situation.

Need for authentic and formative assessment

Authentic assessment is an alternative that schools and teachers can adopt to assess the actual learning of students. Authentic assessment is an ongoing and contextualized activity in which assessment tasks are set in a meaningful context of students' life and learning experiences (Darling-Hammond, 2000). It is a process of gathering information by teachers about students' progress and learning achievement, which is done through various techniques reflecting, in addition to the achievement, students' motivation, and attitudes on instructionally relevant activities with an aim to describe the changes in students after the learning process (Zaim, Refnaldi, and Arsyad, 2020). Generally, authentic assessments are undertaken as an informal practice (Cumming and Maxwell, 1999), which can remedy the shortcomings of the traditional summative assessment measures. In this paradigm, teachers observe the learning and performance of students on a regular basis (Frey, Schmitt, & Allen, 2012), and develop the instructional plan to suit the learning needs of students as per the information collected on a continuous basis. In this paradigm, teachers are expected to employ multiple bases of evidence collection such as individual students' level of class engagement, their attitude to learning, ability to perform the receptive and productive skills, learning preferences and habits, study habits, etc. This means, teachers can record and monitor students' learning, and adjust their instructional activities to suit the level of students. In this process, the prescribed teaching-learning activities and materials become just a means as the teachers constantly plan and implement most suitable materials and activities to suit the learning needs of their students. Accordingly, students can better be tracked to the expected level

of standards in a right way.

Authenticc assessment, theoretically speaking, is an attempt to elicit information from the learners about their learning in 'a multiple way' because both 'schooling and learning' are also considered a 'multiple activity' (Frey, Schmitt, and Allen, 2012, p. 5) and that there happen many things connectedly while attempting to learn a language that are equally important to assess. In this process, teaching and assessment go hand in hand and both practices complement each other for better learning of language. When the information from assessment is used to improve teaching-learning activities, naturally involvement in assessment becomes a learning activity that empowers the learners for higher stages of language proficiency. This approach also gives a fair value for summative tests as students have to be regularly engaged in class activities and have to utilize the available learning opportunities both in and out of the classroom in order to score better grades. This means that learners develop a good learning habit which, in turn, leads to the development of good language learners.

Authentic and formative assessment for teachers and students

An authentic assessment seeks data about students' learning in order to decide on both the process and product of language learning while seeking information about other important learning behaviour. This practice relates equally to the past instructional activities, planning for further instruction and instructional delivery. Assessment here bridges the gap between what went before and what is coming on in instruction. Both the teachers and learners here see their own accomplishments in terms of what they have achieved so that they can better 'assume responsibility for their teaching-learning activities' (Hamayan, 1995 in Tsagari, 2004, p. 9). Such a practice enables teachers and students to interact more frequently, enhances learners' self-esteem and feelings of efficacy, and promotes autonomous and self-directed learning (ibid).

An authentic and formative assessment measure offers several merits for the teachers. Implementing authentic assessment helps them to capture the full range of learners' performance so that they can diagnose the problems in students in order to adapt instructional activities to meet the needs of students. Teachers trust the results from these assessments because of their direct relation to classroom instructional goals. (Guskey, 2003). For students, involvement in an authentic assessment activity leads to the realization of their individual differences in learning and provide clues about their own patterns and habits of learning. Informal communication with practicing teachers also suggests that both teachers and students are in favour of interlinking assessment and teaching-learning activities for engaged reading, writing, listening, and speaking in English through integrated activities such as reading projects, writing projects, cooperative learning activities, performances, etc. Teachers do understand the value of an ongoing assessment

practice that only in light of the holistic and dynamic assessment data, supportive language learning opportunities can be managed inside the classroom, at school, and beyond the school setting.

Authentic assessment also provides equal benefits for learners. When they are involved in the assessment tasks that replicate the real use of language in real life context, there is every reason to argue that learning data through such tasks can better inform all the concerned about the achievements and weaknesses of teaching-learning activities than the conventionally implemented terminal and annual tests. When the teacher utilizes such data back to his/her teaching activities, he/she can give better feedback on students' performance in a timely and corrective manner so that learners can reflect on their performance for continual improvement in learning.

It is obvious that teachers who develop useful assessments, offer corrective feedback on students' performance, and provide remedial instruction can improve their own instruction and help students learn the most. When the assessment tools are best suited to guide improvements in student learning – such as quizzes, projects, writing assignments, interviews, presentations, etc. – on a regular basis, such tools in turn become the driver for the improvement of both the instruction and learning practices. Also, the results from such assessment measures become more reliable and trustworthy because of their direct relation to classroom instructional goals.

Teachers' concern for assessment

A teacher, for the goal of facilitating students in developing proficiency in English, should have concerns more than preparing the students to obtain high scores in tests. It is important for an English language teacher to understand how engaged the students are in class activities. As far as possible, it is also important to know the learning preferences, strategies, opportunities, and habits of the students so as to manage conducive learning opportunity for all. Research (Gradman and Hanania, 1991, 2017; Education Review Office, 2015and) shows that the background factors have a better predictive value than the immediate test scores of the students in terms of their further education and career success. Therefore, a teacher's focus should be on nurturing students progressively than on preparing them for testing purposes. A teacher should always explore the strategies to elicit authentic data about students' level of learning and use the data to help improve teaching and learning activities.

Assessment influences instruction, whereby teachers gain insights into how students learn in the specific content area and how teachers can facilitate improvements in learning (Conley and Darling-Hammond, 2013). While adopting an authentic assessment practice, the teacher should, therefore, be conscientious about how the data from assessment can be utilized to adjust and

modify their teaching activities so as to meet the students' learning needs and difficulties. For this, a systematic recoding and utilization of assessment data becomes highly important. Rather than involving students in indirect test (such as paper-pencil tests), the teacher should involve students in direct tests and performances followed by a careful analysis of their performance with appropriate feedback mechanism. In addition to the conventional tests, assessment data can be pooled through students' journals, portfolio, observation records, peer-assessment data, etc. Teachers themselves can design and employ various learning-enhancing tasks that merit for the communicative vitality and real-life use of language.

Authentic assessment tasks

As discussed in the foregoing sections, an authentic task, whether for teaching or assessment, is representative of the real life use of language in different contexts, genres and situations. It means the assessment tools should attempt to replicate the condition in which the learners can perform through tasks as in using language for real-life purposes such as reading for information, giving presentations, expressing opinions and arguments, drafting a report, taking part in dialogues, etc. Depending on the curricular expectations, teachers can design and employ various learning-enhancing tasks as a measure for authentic assessment (Darling- Hammond, 2000). However, the decision to choose one task over another should be made based on the communicative vitality and real-life use of language. An array of possible tasks can be designed targeting both the skill and aspect components of language. For assessing speaking skills – such tasks as interviewing, making a telephone call, giving a presentation, participating in a small group discussion, playing a role, etc. for example – can be employed. The rationale behind this list is the learning-enhancing opportunity that the learners will get while preparing for assessment. Unlike the investment made on preparing for a paper-pencil test or a prepared talk, successful involvement in such activities help learners develop the required competence for participating effectively in the real-life use of English. Learners' performance in such tasks also informs the teacher and the concerned learners about the effectiveness of teaching-learning activities while simultaneously providing ample avenues for improvement in practices. Similarly, assessment of the listening skills can be done involving the learners in tasks such as listening to a recorded text, listening to a presentation, participating in a telephonic conversation, listening to a dialogue, listening to a radio or television broadcast, etc. Likewise, the skills of reading can be better assessed by asking the learners read an article, a menu, an advertisement, a brochure, etc. Involvement in such activities inform the concerned about their English language competence in a more valid and reliable way. In the same way, when the learners are involved in the writing tasks such as writing an email or letter, an informative booklet, greeting card, description of places, a tourist brochure, etc. The teacher can better be informed regarding the competence of the learners in using English for communicative

purposes. Here, too, the justification lies in the way such assessment tasks better inform about the ability of the learners to carry out authentic tasks as English language users. In addition to these direct tasks, data can also be elicited through peer-assessment, portfolios, or even by involving the learners in self-assessment activities (Hamayan, 1995 in Tsagari, 2004, p. 11). A practicable approach could be recording learners' level of involvement in class activities, homework, independent tasks, diaries, journals, group and peer learning activities, and so on depending on the possibility in the teaching context.

Concluding remarks

There is no doubt that our school level English language assessment practices need a complete overhaul in light of our changing understanding about the need for integrating assessment and instruction. We are convinced that our conventional achievement tests do not directly assess the quality of teaching-learning activities. We are also convinced that external test results, such as Secondary Education Examination, Basic Level Examination, and even the ongoing terminal and annual tests offer very few insights about the measures to improve students' learning. Indeed, given the tradition of general absence of systematic feedback and remedial support mechanism, our testing practice has become a ritual serving more administrative purposes. It is a common observation that we have a mass of graduates who complete their entire school years without ever getting involved in authentic assessment tasks in English. We can also observe that many school graduates enter colleges and universities, as well as job market, without having developed adequate proficiency and skills required to carry out the academic and career tasks. This situation certainly implies that there are flaws in our education system; and at the core of this, such flaws are in our instruction and assessment practices as well. Correction of the entire course can be a complex matter; however, initiatives and innovations made by classroom teachers in their regular practices of assessment can better inform the entire English language teaching community including the teachers themselves, educators, teacher trainers, curriculum planners, and material developers. We must realize that our existing testing practices do not assess what actually the learners can do using English. We have so far been content with assessing and reporting only about how much they have achieved of what has been taught to them. It is therefore high time that we carried out the responsibility of managing assessment as an integral part of instruction, with a positive intention that the time and effort invested in assessing the learners is worth for improving the overall context of English language teaching.

Bibliography

Acharya Jaya, P. and Shiohata, Mariko. (2014). Transformation of teacher belief and practice? Enhancing formative teaching and learning in Nepal. *The 5th Education for Rural Transformation (ERT) International Symposium Kathmandu*, 17-19 September 2014.

Bachman, Lyle. (1995). *Fundamental considerations in language testing*. Oxford: OUP.

Conley, D.T., and Darling-Hammond, L. (2013). *Creating systems of assessment for deeper learning.* Stanford, CA: Stanford Center for Opportunity Policy in Education.

Cumming, Joy and Maxwell, Graham. (1999). Contextualising authentic assessment. *Assessment in Education: Principles, Policy and Practice,* 6(2), pp. 177-94.

Curriculum Development Centre. (2076). *National Curriculum Framework for School Education.* Author.

Darling- Hammond, J. S. (2000). Authentic assessmnet of teaching in context . *Teaching and Teacher Education*, pp. 523-45.

Doglas, Dan. (2010). *Understanding language testing*. London: Hodder Education.

Duwadi, Eak Prasad. (2018). Historical developments in the teaching and learning of English in Nepal. In *English language teaching in Nepal: Research, reflection and practice* (ed. By Hayes, David). British Council, pp. 179-88.

Education Review Office. (2015). *National assessment of students' achievement* . Author.

Frey, B., Schmitt, V., and Allen, J. (2012). Defining authentic classroom assessment. *Practical Assessment, Research, and Evaluation*, Vol. 17 .

Gradman, Harry; and Hanania, Edith. (1991). Language learning background factors and ESL proficiency. *The Modern Language Journal, 75(1)*.

Gradman, Harry; and Hanania, Edith. (2017). The influence of student background characteristics on proficiency in English as a foreign language: Indonesian context. *Jurnal Sosial Humaniora*, Vol. 10(2).

Green. (1998). *Assessment with and for Students* (n.g.)

Guskey, Thomas. (2003). How classroom assessments improve learning. *Educational Leadership*, February 2003, Vol. 60: 5.

Harlen, Wynne. (1994). *Concepts of quality in student assessment*. A paper presented at the Annual Meeting of the American Educational Research Association, New Orleans, LA (April 4-8, 1994).

Hughes, Arthur. (2003). *Testing for language teachers*. Cambridge: Cambridge University Press.

Khaniya, Tirtha R. (2005). *Examination Enhanced Learning*. Lalitpur: Millennium Publication (P) Ltd.

Ministry of Education . (2009). *School sector reform plan 2009- 2015.* Author.

Ministry of Education. (2016). *School sector development plan 2016- 2022.* Author.

Norris, John. (2012). Purposeful language assessment: Selecting the right alternative test. *English Teaching Forum*, 3. pp. 41-45.

Tsagari, Dina. (2004*). Is there life beyond language testing? An introduction to alternative language assessment*. Lanchester University 58. CRILE (Center for Research in Language Education).

Zaim, M., Refnaldi, and Arsyad, S. (2020). Authentic assessment for speaking skills: problem and solution for english secondary school teachers in Indonesia. *International Journal of Instruction*, 13(3), pp. 587-604.

Reading Comprehension of Grade 8 Students: A Glimpse of Item Piloting

✍ Parshu Ram Tiwari
Education Review Office

Abstract

This paper highlights the levels of reading comprehension of Grade eight Nepalese students in English. To fulfill the objectives of this article, about 300 students' responses per item were collected from seven districts representing different geographical regions of Nepal. Students' scores in altogether eight different items (three literal comprehension, three reorganization, and two inferential items) from three different reading texts were analyzed. The author employed quantitative design with a descriptive analysis of students' scores. The analysis reveals that Grade 8 students in Nepal are weaker in responding to reorganization and inferential items compared to literal comprehension. The students lack the skill of reading between the lines and synthesizing or analyzing different parts of reading text to make meaning. However, a higher number of students successfully located directly stated facts and information givein in the text.

Key terms: assessment framework, comprehension process, literal comprehension, reorganization, inference

Introduction

National assessments have been conducted globally to inform governments about what reforms are necessary to improve the quality of students' learning from diverse social groups. Since 2011, Education Review Office (ERO), Sanothimi has completed national assessments of students' achievement in different subjects at different grades. ERO carried out the national assessment in English at Grade 5 in 2012, Grade 10 in 2019, and Grade 8 in 2020 (Khanal and Phyak, 2018). National assessment in English in Nepal is carried out focusing on two skills: reading and writing while international assessments like Program for International Student Assessment (PISA) and Progress in Internation Reading Literacy Study (PIRLS) carry out large scale assessment of English only in reading skill. Unlike PISA and PIRLS, ERO in collaboration with British Council Nepal has initiated the assessment on listening and speaking at Grade 8 in 2020 as a part of national assessment, with the 10% sub-sample of large-scale assessment in reading and writing.

International assessments like PISA and PIRLS have defined reading comprehension and carried out the assessment accordingly. OECD (2019) has defined that reading literacy is understanding, using, reflecting on, and engaging with written texts, to achieve one's goals, develop one's

knowledge and potential, and participate in society. In this definition, the word "understanding" refers to "reading comprehension" which is considered a well-accepted element of reading.

Similarly, PIRLS carries out the large-scale international assessment every five years. PIRLS assessment was carried out as the fourth assessment with sixty countries in 2016. PIRLS reading assessment is carried out to assess students' reading achievement in the fourth year of schooling. According to IEA (2015), reading literacy is the ability to understand and use those written language forms required by society and/or valued by the individual. Readers can construct meaning from texts in a variety of forms. They read to learn, to participate in communities of readers in school and everyday life, and for enjoyment. This definition also indicates that reading is the comprehension and use of written texts. It has also highlighted the purpose of reading in different contexts such as personal, academic, social, and recreational.

PIRLS assessment integrates four broad-based reading comprehension processes: i) focus on and retrieve explicitly stated information, ii) make straightforward inferences, iii) interpret and integrate ideas and information, and iv) evaluate and critique content and textual elements (ibid). In the first reading comprehension process, readers are required to focus on the text at the word, phrase, and sentence level to construct meaning. The process also may require the reader to focus on and retrieve pieces of information from several parts of the text. As far as the reading comprehension process' make straightforward inferences' is concerned, readers typically focus on more than just word-, phrase-, or sentence-level meaning engaging with several tasks like inferring that one event caused another event; concluding what is the main point made by a series of arguments; identifying generalizations made in the text; and describing the relationship between two characters. The third reading comprehension process demands readers to make connections that are not only implicit, but they may be open to some interpretation based on their perspective as they engage in the interpretative process. In the fourth comprehension process 'Evaluate and Critique Content and Textual Elements', the readers evaluate the content and elements of a text, the focus shifts from constructing meaning to critically considering the text itself, for example, judging the completeness or clarity of information in the text; judging how well the title of the text reflects the main theme; describing the effect of language features, such as metaphors or tone.

OECD (2019) has mentioned that PISA 2018 framework for reading identifies four cognitive processes that readers activate when engaging with a piece of text. The four processes are: "locating information", "understanding", and "evaluating and reflecting" and "reading fluently". Among these, 'reading fluently' underpins the other three processes. The weightage of reading tasks under 'locating information', 'understanding', and 'evaluating and reflecting is 25%, 45% and 30% respectively.

PISA 2018 Assessment Framework has elaborated on the cognitive process of reading as per the following table.

Cognitive process	Sub-cognitive process	Readers need to:
Locating information	Scanning and locating	scan only a single piece of text to retrieve a few words, phrases, or numerical values.
	Searching for and selecting relevant text	deal with several pieces of text. To locate the desired information, readers need first to identify the appropriate piece of text, which adds to the complexity of this process.
Understanding	Representing literal meaning	paraphrase sentences or short passages so that they match the target information desired by the task.
	Integrating and generating inferences	work with longer passages to establish their overall meaning, connect information across various passages or texts, and infer how they are connected.
Evaluating and reflecting	Assessing quality and credibility	judge whether the content is valid, accurate and/or unbiased, identify the source of the information, and thereby identify the author's intentions and judge whether the author is competent and well-informed.
	Reflecting on content and form	evaluate the quality and the style of the text and assess whether the content and form adequately express the author's purpose and point of view.
	Corroborating and handling conflict	compare information across texts, recognize contradictions between pieces of text, and then decide how best to manage such contradictions.

According to Council of Europe (2018), reception involves receiving and processing input, activating what are thought to be appropriate schemata to build up a representation of the meaning being expressed and a hypothesis as to the communicative intention behind it. In visual reception (reading) activities the user as reader receives and processes as input written texts produced by one or more writers. Council of Europe has mentioned reception strategies (reading comprehension process) as below:

C2	As C1
C1	Is skilled at using contextual, grammatical and lexical cues to infer attitude, mood, and intentions and anticipate what will come next.

C2	As C1
B2	Can use a variety of strategies to achieve comprehension, including reading for main points; checking comprehension by using contextual clues.
B1	Can exploit different types of connectors (numerical, temporal, logical) and the role of key paragraphs in the overall organisation, to better understand the argumentation in a text. Can extrapolate the meaning of a section of a text by taking into account the text as a whole. Can identify unfamiliar words from the context on topics related to his/her field and interests. Can extrapolate the meaning of occasional unknown words from the context and deduce sentence meaning provided the topic discussed is familiar. Can make basic inferences or predictions about text content from headings, titles or headlines. Can follow a line of argument or the sequence of events in a story, by focusing on common logical connectors (e.g. however, because) and temporal connectors (e.g. after that, beforehand). Can deduce the probable meaning of unknown words in a written text by identifying their constituent part (e.g. identifying word roots, lexical elements, suffixes and prefixes).
A2	Can use an idea of the overall meaning of short texts and utterances on everyday topics of a concrete type to derive the probable meaning of unknown words from the context. Can exploit his/her recognition of known words to deduce the meaning of unfamiliar words in short expressions used in routine everyday contexts. Can exploit format, appearance and typographic features to identify the type of text: news story, promotional text, article, textbook, chat or forum etc. Can exploit numbers, dates, names, proper nouns etc. to identify the topic of a text. Can deduce the meaning and function of unknown formulaic expressions from their position in a written text (e.g. at the beginning or end of a letter).
A1	Can deduce the meaning of an unknown word for a concrete action or object, provided the surrounding text is very simple, and on a familiar everyday subject
Pre A1	Can deduce the meaning of a word from an accompanying picture or icon.

(Source of Council of Europe, 2018)

Hence, PISA and PIRLS assessment framework and CEFR levels have given directions to determine the reading comprehension process or strategies that students apply to comprehend the reading text. These are helpful to develop items and design reading tasks for the assessment of students' achievement.

Reading comprehension processes are found to be based on two popular taxonomies: they are Bloom's Taxonomy and Barrett's Taxonomy. Barrett's taxonomy (as cited in Clymer, 1968) is a taxonomy made by Thomas C. Barrett in 1968; it is used for reading comprehension. It helps to design instructional activities for teaching reading comprehension and develop reading comprehension tasks and questions for assessing students' reading comprehension cognitive process.

The Revised Bloom's Taxonomy (Anderson et al., 2001) consists of six cognitive processes: remembering, understanding, applying, analyzing, evaluating and creating which may not be as applicable as Barret's Taxonomy to reading comprehension. For example, the lowest cognitive process in Bloom's taxonomy is 'Remembering (Exhibit memory of previously learned material by recalling facts, terms, basic concepts, and answers.)' does not apply to the reading comprehension process since readers are not required to 'remember' anything while responding to the items based on the given text. Bloom's Taxonomy was not originally coined focusing reading comprehension solely but Barret's Taxonomy was so. Therefore, Barret taxonomy is better to analyze students' reading comprehension compared to Bloom's taxonomy.

Barrett's taxonomy consists of five levels of reading as shown in the following table.

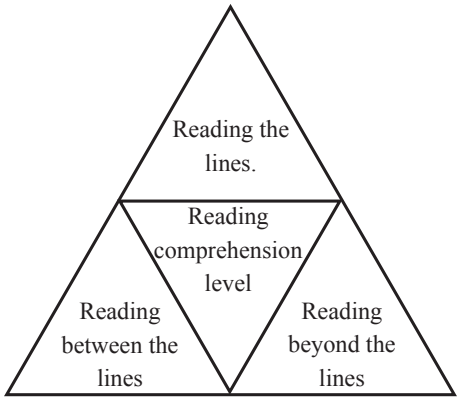
Level	Comprehension cognitive process	Elaboration
I	Literal comprehension	Literal comprehension focuses on ideas and information which are explicitly stated in the selection.
II	Reorganization	Reorganization focuses on analysing, synthesizing, and/ or organizing ideas or information explicitly stated in the selection.
III	Inference	Inferential comprehension requires students to connect the ideas and information explicitly stated in the selection, and his or her intuition and personal experience to make meaning.

Level	Comprehension cognitive process	Elaboration
IV	Evaluation	Evaluation requires a student to make an evaluative judgment by comparing ideas presented in the selection with external criteria given, other authorities, or other written sources, or with internal criteria provided by the reader's experiences, knowledge, or values.
V	Appreciation	Appreciation involves all the previously cited cognitive dimensions of reading, It deals with the psychological and aesthetic impact of the the text on the reader. Appreciation calls for the student to be emotionally and aesthetically sensitive to the work and to react the worth of its psychological and artistic elements.

Source: http://staffnew.uny.ac.id/upload/198605272008122002/pendidikan/bahan+ajar+membaca+kompre+taksonomi+Barret.pdf

According to Kent State University (2020, August 11), in its web page, has mentioned three levels of reading comprehension as shown in the following figure:

These three levels can be compared with the Barret Taxonomy. Reading the lines refers to 'literal comprehension' and 'reorganization' while 'reading between the lines' refers to 'inference' and 'reading beyond the lines' refers to 'evaluation' and 'appreciation' as Gray (1960) stated that the taxonomy attempts to distinguish between questions which require students to 'read the lines' (Literal comprehension and Reorganization), 'read between the lines' (Inferential Comprehension), and 'read beyond the lines' (Evaluation and Appreciation).



Based on the different levels of reading comprehension, the broader categories of reading comprehension are higher level and lower level processing in reading comprehension. H**igher-level processing** refers to an overall understanding of paragraphs or the whole text. As per higher processing, readers make inferences to understand information that is not stated directly in the text. We will also use our knowledge and experience of the world to help our understanding. The higher-level process covers reorganization, inference, evaluation, and appreciation of Barret Taxonomy, as well as reading between the lines and reading beyond the lines. Conversely, **lower-level processing** refers to recognizing the basic units of the text such as letters, words, and building up meaning at the sentence level. For example, students whose own language does not use the Roman alphabet will need to recognize the letters of the Roman alphabet first and how they are grouped to form words. Only once they have decoded the script will they be able to read a text in English. From the reading comprehension perspective, lower-level processing resembles 'reading what is right there' and 'literal comprehension'. So, lower-level processes often operate at a more **local** level (to understand individual words and sentences, to look for specific information) and higher-level processing helps us more with **global** understanding (using information from the whole text, linking it to other information, inferring meaning).

Objective

Originally, reading comprehension items and students' responses to them were used for the national assessment of the English language in Nepal. The data were used for item analysis focusing on the parameter like difficulty level, discrimination level, and point bi-seral. Therefore, using these data, the secondary data here, the article has objectives to:

i. find out the level of students' reading comprehension, and
ii. explore the reading comprehension strategies of students.

Method

The study was grounded on the quantitative analysis of students' responses to the items piloted for National Assessment of Students' Achievement (NASA), Grade 8, 2020. For National Assessment of Students' Achievement (NASA) of Grade eight students (Carried out in Feb, 2020), for English subject, six sets of items were developed for piloting and piloted in seven districts. Approximately 1800 students (about 300 in each set) participated. After piloting, items were analyzed, and the items were finalized as per the item analysis for the national assessment. The items were piloted in 2019. The tool of this study was items developed for the piloting and data are the scores of students. For piloting, six sets of items were developed comprising 36 reading texts along with respective items, six texts in each set. To fulfill the objective of this article, altogether eight items representing literal comprehension (3), reorganization (3), and inferencing (2) from three reading texts were chosen. A descriptive analysis of the data was carried out to find out the percentage of students who responded to various types of items.

Items and data analysis

As stated before, eight items representing three cognitive processes like literal comprehension, reorganization and inference from different three reading texts were the tools for collecting data. According to Day and Park (2005), literal comprehension refers to an understanding of the straightforward meaning of the text, such as facts, vocabulary, dates, times, and locations. Questions of literal comprehension can be answered directly and explicitly from the text. They further state that literal comprehension items are applied first to make sure that students have understood the basic or surface meaning of the text. Literal comprehension refers to the locating information as in PISA assessment framework, 2018 and focus on and retrieve explicitly stated information in PIRLS assessment framework, 2016.

According to Parkin, Parkin and Pool (2003), reorganization is the reading skill of reconstructing two or more pieces of information contained in the text to form a complete idea. Students must use information from various parts of the text and combine them for additional understanding. For example, the reorganization item has been given in the following box:

Claire Sako was born in Malaysia, and went to school in Thailand. After taking a history degree at Oxford University, England, Claire taught in several girls' schools in Ireland and Japan.
Item
How many countries has Claire lived in?
Source (Parkin, Parkin and Pool (2003)

Reorganization item also refers to locating information. Therefore, reorganization is also called a type of literal comprehension, an advanced type of literal comprehension. PISA framework has divided locating information into two: i) scanning and locating and ii) searching for and selecting the relevant text, the first indicates literal comprehension while the latter reorganization. As far as CEFER level is concerned, literal comprehension and reorganization fall on A1 and A2 levels. As indicated in PIRLS assessment framework, literal comprehension and reorganization fall under 'focus on and retrieve explicitly stated information'.

Day and Park (2005) have stated that making *inferences* involves more than a literal understanding. They further state that the answers to inference questions are based on material that is in the text but not explicitly stated. An inference involves students combining their literal understanding of the text with their knowledge and intuitions.

In this analysis, low level of inferential items has been mentioned since the items in Grade 8 NASA were developed from this category. Inferential items related to this study represent items from the category 'making straightforward inferences' as in PIRLS assessment framework. Advance type of inferential items like 'integrating and interpreting' have not been used in this study since such type of items was not developed for piloting.

Selected reading texts along with the relevant items and analysis of students' scores have been given below:

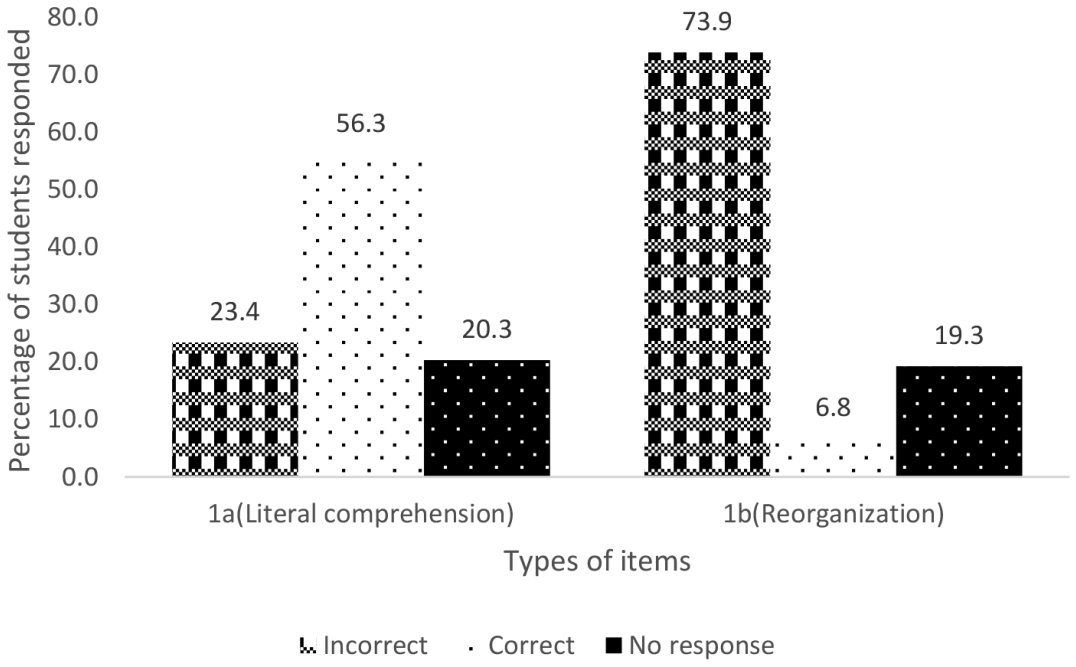
Text I

Read the following text and fill in the blanks with the correct information.

Last Sunday, I visited the industrial fair in Kathmandu with my parents. It was organized by the Small-Scale Industries Department. All the states of Nepal had put up their stalls and decorated them beautifully. The exhibition attracted a large crowd of people from all parts of the country and abroad. Maps and charts were displayed at the main gate and signboards at the corners. Many foreign countries also took part in the exhibition. Canada, Russia, Japan, India and China had put up their stalls. We saw the industrial progress made by these countries. I was much impressed by the beautiful art of China and Japan. Toys from Japan were very attractive. There was also a toy bus for the children to play in. We enjoyed the dance performance presented by Russian artists. Industrialists and businessmen from all over the world were busy advertising their products. We had some Indian food in a restaurant. In the evening we returned home tired but happy.

Items	Comprehension process
1a. The narrator went to the fair along with his/her …….	Literal comprehension
1b. The number of countries that had set up the stalls is ……	Reorganization

Figure 1: Percentage of students who responded to the items (a)



As shown in figure 1, there were 56.3% students (295) who responded to question 1a (literal comprehension); and 23.4% of them responded to the item incorrectly and 20.3% dropped the item while around 6.8% students (295) could respond to item 1b (reorganization) correctly but rest of the students responded incorrectly and could not respond at all. Here, a huge gap has been noticed between the percentage of students responding correctly to these two types of items. From this, it can be generalized that students have found reorganization items more difficult compared to literal comprehension items that were asked from the same reading stimulus.

Text II

Read the email below and tick (✓) the correct answer to each of the questions.

To: marco147@mail4me.uk

Subject: Hi

Hi Marco,
Nice to meet you! My name's Sara and I'm fifteen. I live in London with my mum and my little brother Alfie. We live in a small house in Greenwich. It's got three bedrooms and a small garden.

I live near my school so I walk to school every day. I like school and my favourite subjects are maths and ICT. I want to work with computers when I leave school. What about you? What subjects do you like at school? I enjoy playing hockey and I'm in the school hockey team. Last week, we won a match and I scored a goal!

My best friends are Jo and Steph and we're in the same class. Our teacher Mrs. Jenkins is nice, but sometimes she gives us lots of homework. After school, I often go to a café with my friends. The café has got Wi-Fi so we can chat online and then usually we go home to do our homework.

On the weekend, I sometimes play hockey and I often go roller-skating in the park. I'm good at roller-skating because I can go very fast and sometimes I skate when I take my dog for a walk!

Best wishes

Sara

Items	**Comprehension process**
2a. Who are Sara's friends at school? i. Macro and Jenkins ii. Jo and Steph iii. Macro and Jo iv. Jenkins and Steph	Literal comprehension
2b. How many members are there in Sara's family? i. two ii. three iii. four iv. five	Reorganization
2c. What is the relationship between Marco and Sara? i. classmates ii. family members iii. new friends iv. relatives	Inferencing

Figure 2: Percentage of students who responded to the items (b)

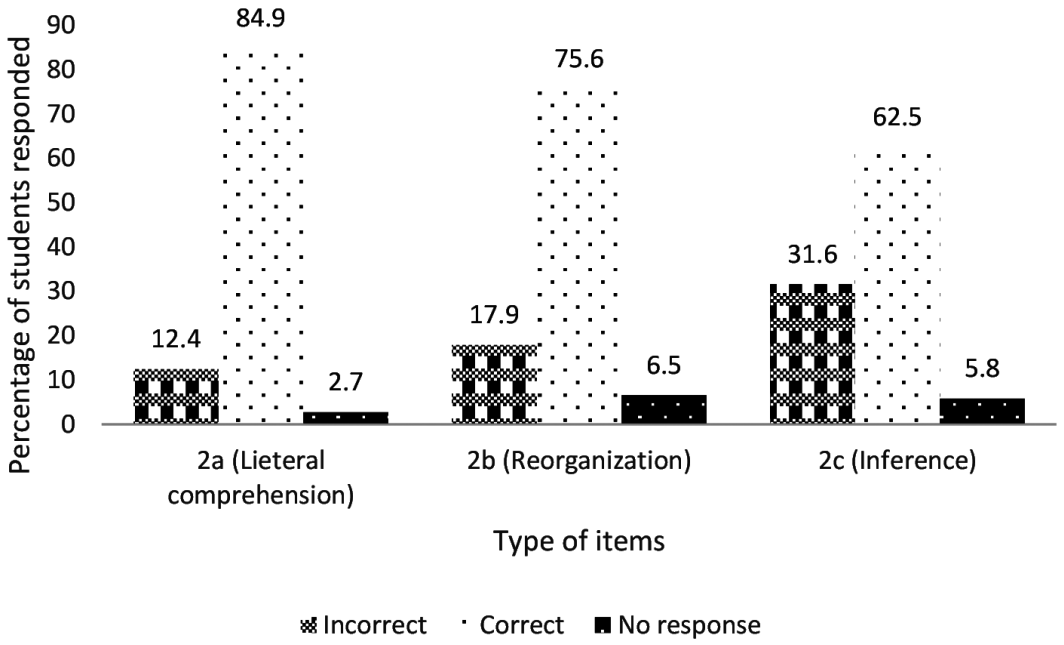


Figure 2 shows the percentage of students who responded to three types of items based on the given text. Percentage of students who correctly responded to the items 2a (literal comprehension), 2b (reorganization) and 2c (inferential) is 84.9%, 75.6% and 62.5% respectively. According to the figure, students are less capable to respond inferential items compared to literal comprehension and reorganization.

Text III

Read the following letter and answer the questions that follow.

Customer Services
109 Regents Park

London
NW 12 6MB

35 Princess Street
Dublin

DX35LY
25th January 2011

Dear Sir /Madam,
I am writing to complain about a digital clock radio that I bought from Designers Electronics in Grafton Street Dublin three months ago. I bought it as a present for a friend. It worked perfectly for a few days but then some problems started. It can only tune in to a few radio stations instead of hundreds. I can't switch the night light on and off. The alarm clock does not work either. As a result, my friend was late for work.

When I returned the clock radio to the shop, the shop assistant was extremely unfriendly and refused to repair it or give me a refund.

I would be grateful if your company could repair the digital clock radio. If this is not possible, I would like a full refund so that I could buy something else for my friend.

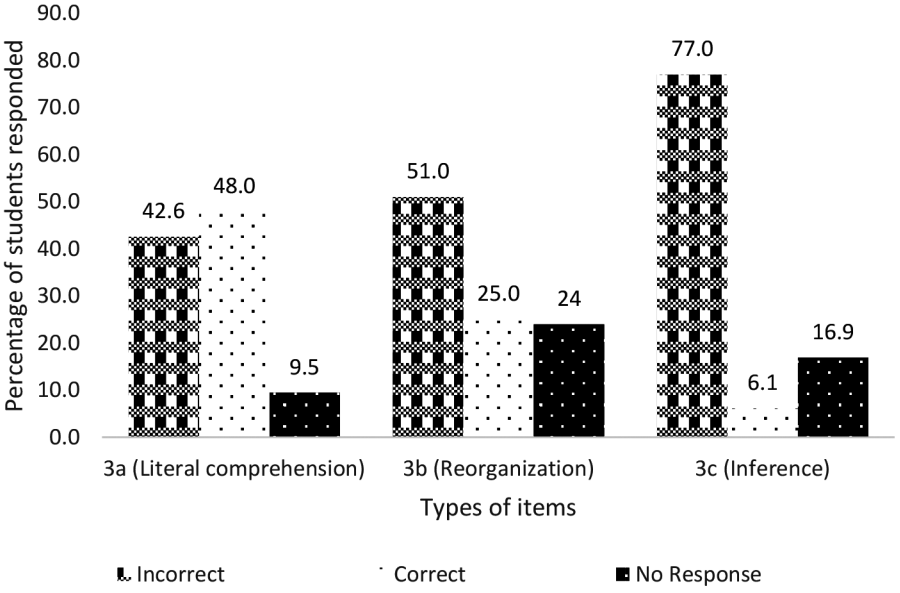
I look forward to hearing from you shortly.

Yours faithfully,

Margaret Harper.

Items	**Comprehension process**
3a. Why has Margaret Harper written this letter?	Literal comprehension
3b. What does the pronoun 'it' refer to in the second sentence of the first paragraph?	Reorganization
3c. When does Margaret want a refund?	Inferencing

Figure 3: Percentage of students who responded to the items (c)



Like the previous figures, figure 3 also presents the percentage of students who responded to items based on reading text. This figure explicitly shows that students' response to inferential item (3c) is very low with 6.1% out of 291 students, while 48% and 25% students responded to item 3a (literal comprehension) and 3b (reorganization) respectively. From this figure too, it can be generalized that students are less proficient in inferential reading compared to literal comprehension.

Findings and discussion

Reading comprehension involves two primary dimensions – literal and inferential. However, these two dimensions have some sub-dimensions, for example, under literal comprehension there are two dimensions: locating facts and information in a piece of text, and by combining different parts of the text. Similarly, inferential comprehension is composed of sub-dimensions such making straightforward inference, integrating and interpretation (IEA, 2015). Another comprehension level is called 'evaluating and reflecting the text' which is beyond the lines of text (IEA, 2015, OECD, 2019).

Most of the items used in NASA Grade 8 belonged to literal comprehension and reorganization. Few items belonged to inference (making straightforward inference). No items belonged to 'evaluation and reflecting' category, therefore this category of items has not been used in this

study.

The study found that around 50% of the total participant students were able to answer literal comprehension items correctly. This indicates that half of the Grade 8 students cannot read the text for the basic and surface meaning of the text. This shows that Grade 8 students have a low level of reading comprehension. It means they can comprehend explicitly stated information in a single piece of reading text.

As per the analysis of the results of the above-stated items, in the text III, very few students (around 6%) have given correct responses to the inferential item, while 62% responded correctly to the inferential item in reading text II. This result may have several reasons such as text difficulty, types of items and words chosen in the item. However, within the same text, the percentage (62%) of inferential item responders is less than that of literal comprehension and reorganization item responders. More students have given correct answers to items (literal, recognition and inferential) in multiple-choice items compared to short answer questions.

The result has shown that students are also unable to respond to the items that demand synthesizing more than one part of the text (reorganization). In all three reorganization items, fewer students responded compared to literal comprehension. From this, it can be generalized that Grade 8 students are weaker in making meaning by combining different parts of the text. Similarly, fewer number of students gave correct answer to inferential items compared to literal comprehension and reorganization. Students have difficulty reading the text in line with the principle of 'reading between the lines'.

Conclusion

As the result of this analysis says, Grade 8 students are weaker in responding to inferential and reorganization items compared to literal comprehension. Only half of the students are good at locating information directly stated in the text. From this, we can conclude that half of the grade 8 students do not even have the minimum level of reading comprehension. The students have low performance to find out facts and information by synthesizing different parts of the text. This shows a great issue of reading comprehension in the field of teaching and learning in English language class. In this regard, from the elementary level, students should be taught in such a way that they should be familiarized with all types of reading comprehension such as literal comprehension, reorganization, inference, and evaluation and reflection. Further, a study can be carried out to find out where the gap is. It may be in designing curriculum and textbook or in teacher efficiency or in the pedagogical process in the classroom or test scheme.

References

Anderson, L.; Krathwohl, D.; Airasian, P.; Cruikshank, K.; Mayer, R.; Pintrich, P.; Raths, J.; and Wittrock, M. (2001). *A taxonomy for learning, teaching, and assessing: A revision of Bloom's taxonomy of educational objectives.* (Abridged edition). New York: Addison Wesley Longman.

Barrett, T.C. (undated). *Taxonomy of cognitive and affective dimensions of reading comprehension*. Unpublished paper cited by Clymer, 1968.

Council of Europe. (2018). *Common European framework of reference for languages: Learning, teaching, assessment. Companion volume with new descriptors.* Retrieved from: https://rm.coe.int/common-european-framework-of-reference-for-languages-learning-teaching/16809ea0d4

Day, Richard R.; and Park, Jeong-suk. (2005). *Developing reading comprehension questions. Reading in a Foreign Language,* 17(1).

Gray, W.S. (1960). The major aspects of reading. In *Sequential development of reading abilities*. Ed. H.M. Robinson. Supplementary Educational Monographs No. 90. Chicago: University of Chicago Press.

International Association for the Evaluation of Educational Achievement-IEA (2015). *PIRLS 2016 assessment framework.* Second Edition. TIMSS & PIRLS International Study Center, Lynch School of Education, Boston College.

Kent State University. (2020, August, 11). Three Level Comprehension Guide for Active Reading. https://www-s3-live.kent.edu/s3fs-root/s3fs public/file/Three%20Level%20 Comprehension%20Guide%20for%20Active%20Reading.pdf

Khanal, Peshal; and Phyak, Prem. (2018). *Assessment framework for grade ten in Mathematics, Nepali, Science and English*. Sanothimi, Bhaktapur: Education Review Office.

OECD (2019), *PISA 2018 results (Volume I): What students know and can do*, PISA, OECD Publishing, Paris, *https://doi.org/10.1787/5f07c754-en*.

Parkin, Chris; Parkin, Catherine; and Pool, Brian. (2003). *Key into reorganization: Guide and answers (Key Comprehension Series)*

The Barrett Taxonomy of Cognitive and Affective Dimensions of Reading Comprehension (n.d.). http://staffnew.uny.ac.id/upload/198605272008122002/pendidikan/bahan+ajar+membaca+kompre+taksonomi+Barret.pdf

Request to the Writers for Academic Articles

The Education Review Office (ERO) invites academic articles from writers for the forthcoming issue of Nepalese Journal of Educational Assessment (NEJEA) on the area of educational assessment, which includes themes, principles, theories, practices, issues and innovations on student assessment and performance audit of educational institutions. Along with electronic copy of article writer (s) should provide with a brief CV.

Articles should:

- **be written in English language.**
- **consist minimum of 4000 to maximum of 6000 words typed using Times New Roman Font.**
- **be well organized in standard form along with proper citation and referencing in established format based on APA referencing guidelines.**
- **have a short and precise abstract of 100 to 150 words.**
- **be an original not published elsewhere earlier.**
- **be either conceptual or empirical, however, we encourage for the articles having a strong linkage between theory and/or empirical research with the implications for policy and/or practice on educational assessment.**

Editorial Board reserves the right to accept, reject or publish with editing the articles received.

NEJEA
ERO

Volume 3 • Issue 1
2021 January

Government of Nepal
Ministry of Education, Science and Technology
Education Review Office
Sanothimi, Bhaktapur
Nepal
Phone: +977-1-6633556, +977-1-6633557
Fax: +977-1-6633556
Email: nejea.ero@gmail.com
Website: www.ero.gov.np