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### **Developing a Model for Assessing School Education System**

Gembo Tshering<sup>1</sup>

### **Abstract**

There is increasing interest in analysing and benchmarking educational performance in many countries. However, because of sample size constraints and financial considerations, some countries are not able to participate in high profile international educational assessment programmes such as Programme for International Student Assessment (PISA) and Trends in International Mathematics and Science Study (TIMSS). This leads to the challenge of devising appropriate school education assessment models for such countries. We outline a process, which was followed for a doctoral study, for generating such a model. We believe that our process and the resulting model will help some countries to initiate a comprehensive national school education assessment programmes.

**Keywords:** assessment; education; evaluation; effectiveness; PISA; and TIMSS

### Introduction

In an international context where education is universally understood as a key capacity-builder for nation states, analysing how school education systems are performing in high profile international assessment programmes such as PISA and TIMSS have received increasing scrutiny and critique (McGaw, 2008b; Wagemaker, 2008). Despite various legitimate concerns about these programmes and their effects (Egelund, 2008; McGaw, 2008a), there is a persuasive literature about their ongoing value in review and reform of educational systems in many countries (McGaw, 2008b). However, countries with small population and economy are unable to participate in these high profile programmes because of sample size constraints and financial considerations. This raises the challenge of devising a comparative educational assessment model that enables such countries to monitor the performance of their school education system against international standards. Therefore, the purpose of this paper is to describe a process for generating such a model. Drawing on educational effectiveness

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studies and comparative educational assessment models, we develop an educational assessment model that is context-oriented and that has the capacity to facilitate comparative assessments.

### Theorizing a school education assessment model

Studies that seek to explain why students, teachers, schools, or countries differ in their educational outcomes and what causes such differences are generally known as educational effectiveness studies; with educational processes, attainment of educational goals, and educational quality and equity as some central phenomena (Creemers & Kyriakides, 2008; Scheerens, 2000). Further, educational effectiveness studies have been grouped into different traditions: equality of educational opportunity; educational production functions; instructional effectiveness; effective schools; and school effectiveness. Each one of these traditions will be briefly reviewed in chronological order of their development, with the aim of building a substantive foundation for developing a school education assessment model.

Equality of educational opportunity tradition has its genesis in a largescale survey conducted by Coleman, Campbell, Hobson, McPartland, Mood, Weindfeld et al. (1966) to assess the availability of equal educational opportunities to American students. This study was a classic example of an input-output model with input being mainly resources and output being student achievement. However, this tradition has been criticized for its limited attention to school process variables (Scheerens, 1990). As a result, educational production functions tradition has emerged, and it incorporated input-output relation in terms of costs of input resources and values of educational outputs, as commonly emphasized by economists, resulting in an assumption that increased inputs should lead to increased outcomes (Scheerens, 1990, 1992). However, this tradition was criticized for its inconsistent and insignificant results and exclusion of the nested and the dynamic natures of educational production processes (Hanushek, 1986; Monk, 1992). Consequently, instructional effectiveness tradition was developed to address the weaknesses of the educational production functions tradition. A number of instructional effectiveness research studies has shown a consistent and positive relationship between instructional variables and student outcomes (Schroeder, Scott, Tolson, Huang, & Hsuan, 2007; Seidel & Shavelson, 2007), indicating their capacity to explain educational processes only. Notwithstanding its benefits, the tradition could not generate information across the nested and the dynamic natures of educational production processes. An alternative tradition, effective schools tradition, was developed to include the nested and the dynamic natures of educational process functions. However, effective-schools tradition was criticised for using small samples and aggregating

data only at the school-level (Barber & Mourshed, 2007), implying that the tradition could not generate information about subgroups of students. Finally, school effectiveness tradition was developed with the capacity to address the weaknesses in other traditions. This tradition has been known for its capacity to provide information across different hierarchies of educational production processes (Scheerens, 1992). Apparently, the educational effectiveness research traditions have evolved overtime. The evolution resulted in different models that sought to explain differences in performance between schools and within school.

First, the Integrated Model of School Effectiveness (Scheerens, 1990, 1992, 1997) deserves a brief examination. This model has the features of educational production functions and effective school traditions, such as input-output, input-process, and output. This model also has multi-levels, such as classroom, school-, and context-levels. Further, the model enables the study of cross-level interactions and links output to input and process. However, the model is not explicit with its capability to explain individual student gains, though the output section can represent student achievement after adjusting for student background variables. This implies that the model permits data analysis only at the classroom-level, not at the student-level of aggregation.

Second, Creemers (1994) produced the Comprehensive Model of Educational Effectiveness that includes student-level. Like the Integrated Model of School Effectiveness, Creemers's (1994) model has a multi-level structure; comprising context-, school-, classroom-, and student-levels. Researchers have reported empirical evidence supporting the validity of Creemers's (1994) model, especially its multi-level nature and direct and indirect relationships between the levels and student outcomes (Creemers & Kyriakides, 2006, 2008; Kyriakides, 2008). However, Kyriakides (2008) convincingly pointed out that Creemers's (1994) model allows researchers to use different approaches to measure educational effectiveness factors that lead to inconsistent results with other like models. It was also observed that the studies conducted to test the validity of Creemers's (1994) model did not identify cross-level interactions between the factors at different levels (Kyriakides, 2008). Kyriakides (2008) strongly attributed the absence of cross-level interactions in the studies that tested Creemers's (1994) model to its oversight of the dynamic nature of educational effectiveness.

Third, using the multi-level nature of educational effectiveness and the existence of relationships between levels and outcomes as confirmed by studies that tested Creemers's (1994) model as starting points, Creemers and Kyriakides (2008) developed the Dynamic Model of School Effectiveness. Convincing claims have been reported about the capability of the model in addressing the question of what works in education and why (Kyriakides, Creemers, Antonious, & Demetrious, 2010). Creemers and Kyriakides (2008) incorporate the following assumptions in their model:

- the factors influencing student outcomes are multi-level;
- the influence of classroom-level factors on student outcomes is more direct and proximal than the influences from the factors operating at other levels;
- the higher levels provide an enabling environment for the lower levels;
- the relationship among school-level, context-level factors, and student outcomes develop and manifest themselves over time;
- the effectiveness factors operate differentially across levels in line with contingency theories;
- the relationship between some effectiveness factors and student outcomes are not always linear;
- within-level and between-level interaction effects exist among effectiveness factors.

Creemers and Kyriakides's (2008) model has all the three necessary characteristics of a school effectiveness model as identified by Reynolds, Creemers, Nesselrodt, Schaffer, Stringfield, & Teddlie (1994). However, the model does not have an input unit in it. It is clear from the literature on educational effectiveness that educational input resources contribute to variance in student achievement even after adjusting for student background and prior learning (Scheerens, 2000). Therefore, without the input unit, Creemers and Kyriakides's (2008) model does not align with the literature on educational effectiveness. However, the models, reviewed up to this point, provide strong elements for developing a comprehensive school education assessment model.

### Developing a school education assessment model

The strengths and the weaknesses of the Integrated School Effectiveness Model and the Dynamic Model of School Effectiveness offer important guidelines for developing a school education assessment model. First, a school education assessment model should accommodate the discrete nature of educational productivity, with each production unit (input, process, and output) relating to various correlates of educational effectiveness. Second, a school education assessment model needs context-level, school-level, class-level, and student-level components, as structured in Creemers and Kyriakides's (2008) Dynamic Model of School Effectiveness. A skeletal school education assessment model is thus presented in Figure 1.

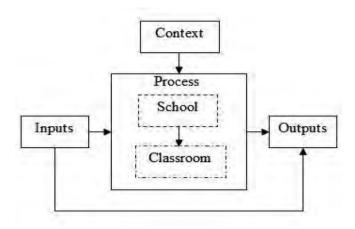


FIGURE 1. The integrated model of school effectiveness.

A closer look at the proposed school education assessment model in Figure 1 reveals some comparative features in relation to other education effectiveness models (Tshering, 2014). The model amalgamates Scheerens's (1992) Integrated Model of School Effectiveness and Creemers and Kyriakides's (2008) Dynamic Model of School Effectiveness. Therefore, the model can be based on the same assumptions formulated by Scheerens (1992) and Creemers and Kyriakides (2008) for their models. A comparison of the proposed school education assessment model with the other two models is presented in Table 1.

**TABLE 1**Comparison of models in terms of their structures

	Integrat- ed School	Dynamic Model of	School Education
Characteristics		1	~
	Effectiveness	School Effec-	Assessment Model
	Model	tiveness	
Context-level	√	√	$\sqrt{}$
School-level	√	√	$\sqrt{}$
Classroom-level	$\sqrt{}$	√	$\sqrt{}$
Student-level	×	√	V
Input unit	√	×	√
Process unit			$\sqrt{}$
Output unit	V	V	V

As shown in Table 1, the three models have considerable similarity. However, the models differ in certain areas. The Integrated School Effectiveness Model lacks the student-level, whereas the Dynamic Model of School Effectiveness lacks the input unit. By integrating the two models, the proposed school education assessment model bridges the gaps between these two models. Thus far, we have shown a procedure for constructing a skeletal frame for school education assessment model, with one such frame presented in Figure 1.

### Identifying educational effectiveness factors

The proposed education assessment model, as in Figure 1, fits well with a typical structure of an education system. Next, educational effectiveness factors that have the potential to explain the functioning of the different levels of the proposed model have to be identified. Researchers have presented a range of benefits from using educational effectiveness factors in educational assessment programmes: disaggregating student achievement by population sub-groups (Barton, 2002) guiding further research on longstanding correlates of educational achievement (Barton, 2002; Grissmer, 2002); informing educational policy about the contexts of learning (Walberg, 2002); evaluating the potential for bias in assessment results, and tracking over time changes in contextual and instructional factors.

Given the wide-ranging benefits of educational effectiveness factors, researchers recommend specific criteria for incorporating such factors in high profile educational assessment programmes. National Assessment of Educational Progress (NAEP) has set the following criteria for selecting educational effectiveness factors: relevance to the main purposes of NAEP; professional standards for reliability and validity; currency; broad public acceptability; and value in comprehending and explaining student achievement for improvement. Other studies note that educational effectiveness factors must be based on the findings from the educational and social science research studies and metaanalyses (Barton, 2002). Persuasive claims have been reported about the concordance between these criteria and educational effectiveness factors used in international educational assessment programmes (NAGB, 2006), implying the international educational assessment programmes as potential database for educational effectiveness factors. Therefore, Table 2 presents a list of educational effectiveness factors used in NAEP, TIMSS, and PISA. Table 2 will be a starting point for identifying educational effectiveness factors for the proposed skeletal education assessment model.

TABLE 2
Contextual variables used in NAEP, TIMSS, and PISA

NAEP Educational Effecti	veness Factors			
Student		Teacher		School
Socio-economic status Race/ethnicity Age Gender Disability status LEP Enrolment status TV watching Absenteeism Language in home Courses taken Time spent on homework Self-efficacy		Race Gender Experience Credentials Academic qualification in teaching subject Professional qualifi- cation Frequency of correction work Frequency of laboratory work	School type Socio-economic Grade structure Instructional day Total enrolment Enrolment mobi Grade retention Graduation rates % of LEP % of students ab % of teachers ab Teacher retention Post-secondary of Use of ICT	lity ssent ssent
TIMSS Educational Effect	iveness Factors			
Student	Teacher		Curriculum Specialists	School
Home and school lives Classroom experiences Self-perception and attitudes Homework Out-of-school activities Use of ICT Home educational support Demographic infor- mation	Certification Induction Profession Profession Demograp Curriculur time spent Instruction Instruction Assessmen Use of IC' Use of call	programme al development hic information n topics taught and time tal activities nt and homework	Formulation of curriculum Scope and content of the curriculum Organization of the curriculum Monitoring and evaluation of the implemented curriculum Curricular materials and support	School demographics School organization School goals Roles of the school principal Resources to support mathematics and science learning Technology, support, and equipment School social climate Parental involvement Teacher recruitment Teacher evaluation
PISA Educational Effectiv	eness Factors			
Student		School	Parent [	science related]
Background Learning and instruction Motivational factors Self-beliefs Value beliefs Subject related careers Use of ICT		policies and instruc- context agement urces	learning Parents' reports on Parents' general va Parents' personal v Parents' love of con issues	of school quality he importance of science science career motivation lue of science

Guided by Table 2, the relation between educational effectiveness factors and student outcomes can be further explored, with the aim of selecting the former for inclusion in the proposed skeletal school education assessment model.

### Educational effectiveness factors at student-level

A review of educational effectiveness studies show a range of educational effectiveness factors related to the student-level of the proposed educational assessment model, and the following factors are common in the studies and are considered necessary for inclusion in the proposed model: gender; age; socio-economic status (SES); engagement; motivation; self-efficacy; self-regulated learning skills; homework; ICT; classroom management; and school climate. Table 3 presents a tabular literature map of these factors with their areas of significance in relation to educational effectiveness and the studies that highlighted the significance.

**TABLE 3** *Educational effectiveness factors at student level* 

Factors	Significance	Study
Gender	Achievement gap; Peer relationship; Co-educa- tion; Academic culture; Class attitude; Achieve- ment orientation; Sub- ject selection	Clark, Lee, Goodman, & Yacco (2008); (Crosnoe, Riegle-Crumb, Frank, Field, & Muller (2008); Malacova (2007); Younger & Warrington (2006); Gaer, Pustjens, Damme, & Munter, (2006); Graham, Tisher, Ainley, & Kennedy (2008); Cox (2010)
Age	School readiness; Academic redshirting; Grade retention; School drop out	Guevremont, Ross, & Brownell (2007); Jimerson, S. R., Pletcher, S. M. W., Graydon, K., Schnurr, B. L., Nickerson, A. B., & Kundert, D. K. (2006)
Socio-economic status	Student achievement; Educational resources; Equity and accessibility	Lee, Grigg, & Dion (2007); OECD (2010)

Engagement	Life-long learning	Hughes, Luo, Kwok, & Loyd (2008); Buhs, Ladd, & Herald (2006)
Motivation	Value motivation; Instrumental motivation; Mastery goal  Performance goal; Student achievement	Tileston (2010); Vansteenkiste, Timmermans, Lens, Soenens, & Broeck (2008); Hattie (2009)
Self-beliefs	Self-concept; Self-effi- cacy; Goal-orientations	Bandura (1977); Hattie (2009); Scheier (2005); Caprara, Barbaranelli, Borgogni, & Steca (2003)
Anxiety	Avoidance tendencies; Tractable nature of anxiety	Carver & Scheier (2005); Ashcraft & Moore (2009); Geist (2010); Hellum-Alexander (2010)
Learning envi- ronment	Competitive learning; Cooperative learning; Structured teaching strategies; Constructivist teaching strategies	Stapel and Koomen (2005);
Self-regulation	Monitoring; Controlling; Evaluating	OECD ( 2010); Boekaerts and Niemivirta (2005);
Homework	Time on task; Feedback; Task frequency; Social learning; Self-discipline	Brock, Lapp, Flood, Fisher, & Han (2007); Cooper, Robinson, & Patall (2006); Brock, et al. (2007); Mullis, Martin, Ruddock, Sullivan, & Preuschoff (2009); OECD (2010): Cooper, et al. (2006)
ICT	Mediational tool; Currency of learning; Self-regulation	Hennessy, and Brindly (2004); Ruthven, K., Hennessy, S., & Brindley, S. (2004); Ilomaki & Rantanen (2007); Mullis, et al. (2009); OECD (2010)

	Physical arrangement;	
Cl	Rules and procedures;	Marzano (2003a, 2003b); Simon-
Classroom management	Student behaviours;	sen, Fairbanks, Briesch, Myers, & Sugai (2008); Cothran, Kulinna,
	Disciplinary interventions	& Garrahy (2003)
School climate	Student misconduct; Aggression; Drug abuse; Delinquent behaviour;	Scheerens (2000); Macneil, Prater, & Bush (2007); Mullis, et al. (2009); OECD (2010); Wilson
Selloof elimate	School size;	(2004); Koth, Bradshaw, and Leaf (2008)
	Teacher turnover	

### Educational effectiveness variables at classroom-level

Similar to the student-level of the proposed model, the classroom-level of the model requires educational effectiveness factors. Professional development, appraisal and feedback, and teaching effectiveness components are commonly reported in the literature as relevant educational effectiveness factors for the classroom-level of the proposed model and considered necessary for inclusion in this model. Other classroom-related educational effectiveness factors like self-efficacy, classroom management, school climate, homework, and ICT have already been examined in earlier section, and teacher demographics will be examined in a later section as part of school resources. Table 4 presents a tabular literature map of these factors together with their areas of significance in relation to educational effectiveness and the studies that highlighted the significance.

**TABLE 4**Educational effectiveness factors at classroom level

Factors	Significance	Study
Professional development	Workshops; Education conferences or seminars; Qualification programmes; Observation visits to other schools; Participation in a network of teachers; Individual or collaborative research; Mentoring; Peer observation; Coaching	OECD (2010); Yoon, Garet, Birman, & Jacobson (2006); Starkey, Yates, Meyer, Hall, Taylor et al. (2009); Wayne, Yoon, Zhu, Cronon, & Garet (2008)
Appraisal and feedback	Professional growth; accountability; opportu- nities for support	OECD (2010); Ministry of Education (2010); Gratton (2010)
Teaching effectiveness components	Instructional variables; instructional strategies; student learning; learn- ing outcomes	Seidel & Shavelson (2007); Marzano (2003b); Hattie (2009)

### Educational effectiveness variables at school-level

The following educational effectiveness variables at school-level are examined in this section and considered necessary for inclusion in the proposed model: school policies and practices related to school admittance, within school ability grouping; school autonomy; parental involvement; educational leadership; and school resources. School climate, as an educational effectiveness factor at school-level has been examined in the section on educational effectiveness factors at student-level. Similar to educational effectiveness factors at student-and classroom-levels, educational effectiveness factors at school-level are examined in terms of their association with student achievement and contribution to overall quality education. Table 5 presents a tabular literature map of these factors together with their areas of significance in relation to educational effectiveness and the studies that highlighted the significance.

**TABLE 5**Educational effectiveness factors at school level

Factors	Significance	Study
School policies	Student admittance; school choice; student mobility; social segrega- tion; grade- and resi- dent-oriented admissions	OECD (2010); Soderstrom & Uusitalo (2010); Gibbons, Machin, & Silva (2008); Lavy ( 2010)
School policies	Ability grouping	Hattie (2009)
School policies	School autonomy	Eurydice (2007); Maslowski, Scheerens, & Luyten (2007); West, Allmendinger, Nikolai, & Barham (2010); Fuchs & Wobmann (2007); OECD (2010)
School policies	Parental involvement	Bowen & Lee (2006); Jeynes (2007); Eamon ( 2005);
Educational leadership	Instructional leadership; transformational leader- ship;	Hallinger (2003); Scheerens, et al. (2003); Leithwood & Jantzi (2005); Witziers, Bosker, & Kruger (2003)
School resources	Teacher ability; Teacher education; Teacher experience; Teacher salary; Teacher-pupil ratio; Per-pupil expenditure; School size; Student SES	Scheerens (2000); Barber and Mourshed (2007);

### Educational effectiveness factors at context-level

Researchers in educational effectiveness have identified context-level educational effectiveness factors as national educational policy, evaluation of educational policy, national education environments, descriptive characteristics of school and its environment, and external achievement stimuli. Table 6 presents a tabular literature map of these factors together with their areas of significance in relation to educational effectiveness and the studies that highlighted the significance.

**TABLE 6**Educational effectiveness factors at context level

Factors	Significance	Study
Context	National educational policy; Evaluation of educational policy; National education environments; Descriptive characteristics of school and its environment; External achievement stimuli	Scheerens (1990, 1992, 1997); Creemers and Kyriakides (2008);

Fleshing out the proposed school education assessment model

The preceding sections identified some key educational effectiveness factors for all the levels of the proposed school education assessment model. This section fleshes out the proposed school education assessment model with the key educational effectiveness factors.

School Education Assessment Model with Educational Effectiveness Factors

The proposed school education assessment model can now be fleshed out with educational effectiveness factors relevant to its levels. First, the model is a multi-level structure, with the structure consisting of context-, school-, classroom-, and student-levels. Second, the model uses the input-process-output paradigm. Third, as discussed, the model is underpinned by the assumptions of the Integrated School Effectiveness Model and the Dynamic School Effectiveness Model. Fourth, context-, school-, classroom-, and student-levels of the model are characterized in terms of the educational effectiveness factors described in the literature of educational effectiveness research and large-scale educational assessments. It may be noted that some factors are used at more than one level (eg., classroom management). We believe that this will enable the comparison of perspectives formed on the common factors at different levels. Figure 2 shows the proposed model with the educational effectiveness factors.

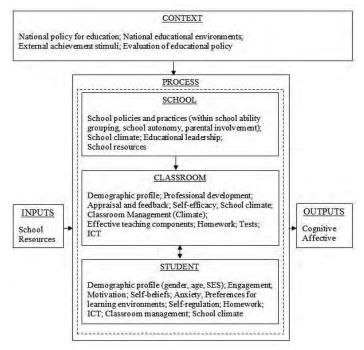


FIGURE 2. School education assessment model fleshed out with educational effectiveness factors.

It can be deduced from Figure 2 that all educational factors in the proposed model may not have significant effects on student achievement other than enhancing its complexity. As Aarts (2007) convincingly elaborates, this relates to parsimony in model specification. However, the parsimony of the proposed model can be examined in two ways. First, the educational effectiveness factors at different levels of the proposed model may provide information about the relationship between the adjacent levels. Second, the proposed model may yield information about the level that relates optimally to student achievement. In either case, the proposed model aligns with its key purpose of informing stakeholders in school education about its overall health by addressing what works in school education and why.

### Validating the Proposed School Education Assessment Model

We present a comparative analysis of the models, with their educational effectiveness, in Table 7, with the aim of enhancing the validity of the proposed model.

**TABLE 7**Comparative list of educational effectiveness factors identified by different models

models		
Integrated School Effectiveness Model	Dynamic School Effectiveness Model	School Education Assessment Model
Context-Level Factors  Achievement stimuli from higher administrative levels  Development of educational consumerism;  Co-variables like school size, student-body composition, school category, and urban/ rural distinctions	Context-Level Factors  National/regional policy for education Evaluation of policy Educational environment  School-Level Factors School policy and evaluation of school policy  Classroom Level Factors	Context-Level Factors  National policy for education Evaluation mechanism for educational policy National educational environment (e.g., educational consumerism, school category) External achievement stimuli
rural distinctions  School-Level Factors  Achievement-oriented policy Educational leadership Consensus, co-operative planning of teachers  Quality of school curricula in terms of content covered, and formal structure Pressure for achievement; Recruitment of qualified staff Financial and material Characteristics of the school Orderly atmosphere Evaluative potential	Classroom-Level Factors  • Quality of teaching (orientation, structuring, modelling, application, questioning, assessment, management of time, classroom as a learning environment)  Student-Level Factors  • Aptitude  • Perseverance  • Time on task  • Opportunity to learn  • SES  • Gender  • Ethnicity  • Personality traits  • Expectations  • Thinking style  • Subject motivation	School-Level Factors  School policies and practices School climate Educational leadership School resources  Classroom-Level Factors Demographic profile Professional development Appraisal and feedback Self-efficacy School climate Classroom Management (Climate) Effective teaching components Homework Tests ICT
Classroom-Level Factors     Time on task     Structured teaching     Opportunity to learn     High expectations of pupils' progress     Evaluation and monitoring of pupils' progress     Reinforcement		Student-Level Factors Gender Age SES Motivation Self-efficacy Self-regulation Learning preferences Homework ICT Classroom management School climate Engagement

As shown in Table 7, the models have similar educational effectiveness factors. For instance, all three models use teaching components as educational effectiveness factors at the classroom-level. On the other hand, the proposed school education assessment model differs from the other two models by its inclusion of ICT as an educational effectiveness factor. However, only by comparing the models will not enhance the validity of the proposed school education assessment model.

A consensual approach to developing an assessment model will give the model wider ownership and strengthen its validity (Mullis, Martin, Ruddock, Sullivan, & Preuschoff, 2009; OECD, 2010). To accord these attributes to the proposed model, the model must be presented to a panel of key stakeholders in school education system. The stakeholders may be identified in terms of patronage, or professional experience, or management and administrative experience, or governance experience. Following such an approach to validating the proposed school assessment model may be informed by some well known approaches, such as Delphi approach and its variants (Cousien, Obach, Deuffic-Burban, Mostafa, Esmat, Canva, Kassas, El-Sayed, Anwar, Fontanet, Mohamed & Yazdanpanah, 2014). The procedures, as highlighted in this paper, were followed in Tshering (2012). Therefore, Tshering (2012) may add further insight into these procedures.

### Conclusion

This paper demonstrated a process to develop a school education assessment model that has the capacity to provide stakeholders in a nation's education system with knowledge to drive sound educational policy decisions to improve school performances. The process involved reviewing the literature on educational effectiveness, developing a skeletal model based on the review, creating a tabular literature map for educational effectiveness factors, fleshing out the skeletal model with educational effectiveness factors on the literature map, validating the model by panelling the model to a panel of stakeholders, and eventually piloting the validated model for further refinement.

The paper also emphasized the need to consider the parsimony of the proposed model by focusing on the model's capacity to provide between-level information and the level that optimally relates to student achievement. It is highly likely that some educational effectiveness factors in the proposed model may not yield useful information about the health of school systems, which can only be known after piloting the model.

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# The Effect of 5E Learning Cycle on Students' Understanding of the Law of Mechanical Energy Conservation

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### **Abstract**

The purpose of this study was to explore grade ten students' understanding of the law of mechanical energy conservation using a 5E learning cycle. An instructional unit was developed based on the contents included in the curriculum for the middle secondary school level and was tailored within the framework of 5E learning model. A pretest posttest nonequivalent control group quasi experimental research design was employed in this study involving 51 grade ten students (27 experimental, 24 control). The concept of the law of mechanical energy conservation was taught using a 5E-based instructional unit for the experimental group while a conventional lecture method was used for teaching the control group. A Conceptual Evaluation Test on the Law of Mechanical Energy Conservation (CETMEC) was administered as pretest and posttest for both the groups to determine the differences in their learning achievements. A t-test analysis for the pretests revealed that there were no significant differences indicating that the learning ability on the concept of the law of mechanical energy conservation for both the experimental and control groups were approximately equal (t(49) = -1.13, p=.26 < .05). However, the posttest analysis showed a meaningful difference between the groups in favor of the experimental group (t(36.6) = -6.54, p = .00 < .05). The magnitude of differences in the means of two groups using the Cohen's d was observed to be moderate.

**Key Words:** Energy, law of mechanical energy conservation, 5E learning cycle, physics,

### Statement of the Problem

Energy is a crucial concept in physics problem solving but it is also often a cause of confusion for students when it is not properly interpreted and presented (Jewett, 2008a). It is so closely related to energy conservation that it is nearly

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impossible to describe it separately (Goldring & Osborne, 1994; Tatar & Oktay, 2007). Studies have revealed that the most common difficulty in understanding energy is its conservation (Swackhamer, 2005). Although the students can easily define the law of conservation of mechanical energy, a majority of students still think that the energy can be created as well as destroyed (Swackhamer, 2005). This indicates that the ideas perceived by the students are not parallel with the scientific perspectives.

Many scientific concepts are abstract and complex for the students, possibly because of inappropriate materials and pedagogies used by the teachers in the classrooms. However, as scientists do, it is important to break down these abstract concepts into something more concrete so that it becomes simple for the students to understand.

The law of mechanical energy conservation in the Bhutanese context is largely taught using theoretical or rather imaginary explanations provided in the textbooks. Abstract concepts such as this can be made more exciting and concrete using appropriate pedagogy and materials in the classrooms. One such strategy is by introducing the 5E learning cycle approach-based instructional unit, that offers students hands-on learning as well as opportunities to engage and encounter a direct experience resulting to an expansion of reflective skills and retentions (Haury & Rillero, 1994). The use of hands-on inquiry in the 5E learning cycle not only enhances students' understanding but also shifts in the students' understanding (Bybee et al., 2006). This study therefore attempts to develop an instructional unit based on the 5E learning cycle approach to enhance the students' understanding of law of mechanical energy. In doing so, it attempts to answer the following research question: To what extent has the 5E learning cycle approach helped in enhancing the students' understanding of law of mechanical energy conservation?

### Literature Review

With the aim of bringing a reform in student learning, a lot of learning theories have evolved that facilitated to shift the traditional mindset from accepting the students as 'sponges' to recognizing they are 'active builders of the meaning' (Wilson & Peterson, 2006). Rousseau and Dewey, who have done a pioneering success to incorporate the constructivist perspectives into the field of education (Dimock & Boethel, 1999) believed that learners construct knowledge (Dimock & Boethel, 1999; McLeod, 2003) and that they take into consideration the existence of prior knowledge, understandings and interest (McLeod, 2003). According to constructivist views, the learners' knowledge is constructed through one's own experiences and contact with the environment. In such learning, the learners are active knowledge constructors and the instructor

assists as a facilitator of transmitting the knowledge.

Similarly, in Vygotsky's (1896-1934) social constructivist theory, the social interaction is a key element that aids the learners to make meaning from their knowledge. When humans are made to collaborate and interact, they communicate with each other to link the ideas and form meaning through the process of scaffolding. This theory believes that effective learning in students will take place when the tasks provided to them are too challenging to perform alone but can be done through social cooperation and collaboration, a phenomenon referred to as 'zone of the proximal development'. Interestingly, this study falls within the framework of social constructivism which functions under the umbrella of constructivism.

Although science educators have started to initiate a way of teaching science for understanding, a wide gap is still reported to have existed between how students learn and what they learn (Holubova, 2008) because traditional physics classrooms continue to emphasize learning facts and definitions and excessive use of formulae to answer problems (Mulhall & Gunstone, 2008). One such concept in the Bhutanese context would be the law of mechanical energy conservation which is explained using illustrative but imaginary examples in the textbooks.

The concept of energy conservation has gained much attention (Solbes, Guisasola, & Tarín, 2009) due to which it remained as a subject of interest for many physicists. While it forms a fundamental part of any introductory physics (Hwu, 1980; Hassani, 2005; Santos, Soares, & Tort, 2010; Li, 2012; Bambill, Benito, & Garda, 2004) and classical mechanics (May, 1936), students are able to solve only the simple energy problems and not the ones that involve principles of energy conservation (Speltini & Ure, 2002). The concept of energy conservation is widely misunderstood and accepted in a manner that is not parallel with the scientific point of view (Solbes et al., 2009).

One reason could be because the learners are not familiar with the usage of the word while describing the law of mechanical energy conservation. Students are often confused with the terms like 'conservation' because they think that it is a synonym to the word 'saving' (Tatar & Oktay, 2007; Mweene & Mumb, 2012). Even in science teaching, there are two meanings of conservation that confuse teachers (Sefton, 2004). Conservation from the perspectives of the physicists' states that, no matter what events take place, at the end the total mechanical energy in the system remains the same. But the majority of the students think that conservation indicates saving or not wasting energy. The students are able to remember and recite the law with a relative easiness, but are not able to apply correctly in real situations (Tatar & Oktay, 2007; Mweene & Mumb, 2012). This is possibly because students, as asserted by Driver and Warrington (1985), consider energy not as a conserved quantity but something that is active

only for a short while. The synonymous use of the term conservation and saving in daily life is also accredited for the same cause (Mweene & Mumb, 2012).

According to Millar (2005), Featonby and Jeskova (2012) and Needham (2011), conservation is defined as the total amount of energy, which remains same both in the beginning and the end no matter what kind of processes or events take place. This means that energy can neither be created nor destroyed (Tatar & Oktay, 2007; Wisniak, 2008; Daane, Vokos, & Scherr, 2013; Larmer, 2014; Herrmann-Abell & DeBoer, 2011; Mweene & Mumb, 2012). In principle, energy is a conserved quantity (Driver & Warrington, 1985) and that same quantity remains constant at the end as was in the beginning of the process (Daane et al., 2013). In Newtonian mechanics, the law of mechanical energy conservation implies that the sum of the potential energy and the kinetic energy is always constant in an isolated system (Wisniak, 2008; Santos, Soares, & Tort, 2010). This means that for the particular system, the total amount of energy can only be changed if the energy is transferred into that system or if the energy is being transferred out of that system. Feynman (1963) further highlights the fact that this numerical quantity does not change even when there are manifold changes of nature and its processes. He states that even after the tricks of the nature and repeated transformations, the quantity remains the same throughout as we calculate all forms of energy in the system again.

Precisely, in the law of mechanical energy conservation, the energy can change from one kind to another, but at the end, the total energy involved in the system always remain the same. The energy which was present in the beginning might have turned out to be different in its form during the process, but the total amount of that energy at the end of the event within a system remains the same as in the beginning. The law of mechanical energy conservation takes place only in an isolated system where there is no transfer or exchange of energy across the boundary of the system (Jewett, 2008b). However, the existence of such isolated systems is only theoretical and that they do not exist at all. In most of the scientific experiments, the non-conserved forces such as friction and gravitational forces are often neglected and assumed negligible even if we know that their existence is inevitable and pervasive.

In the pretext of such conditions, studies have been carried out to study the law of mechanical energy conservation under varied situations. The law of mechanical energy conservation was studied based on the Galilean principle of relativity and both conservation of linear momentum and angular momentum was also discussed (Santos et al., 2010). Conservation of energy was also studied using a projectile motion (Hwu, 1980) and its bowing effect using an inclined plane (Li, 2012). Similarly, conservation of mechanical energy in the theory of inviscid fluid sheet was studied (Shields & Webster, 1989) and found that mechanical energy is conserved. Bambill et al. (2004) explained the law using

a conical pendulum. In a laboratory study conducted by (Bryan, 2010), a video analysis was used to study the motion in a) an object that is freely falling, b) in a simple pendulum c) rolling of objects in an inclined plane and d) object oscillating on springs using a software LoggerPro. The study has provided a precise data, yet it was more sophisticated (Bryan, 2010).

Speltini and Ure (2002) have conducted a study based on an exploratory approach with 114 students to find conservation principles, meaning of conservation and examples of both conservation and non-conservation. Daane et al. (2013) involved K-12 teachers to study the concepts, including conservation, amount and forms of energy and its usefulness. Meanwhile Brook and Wells (1988) surveyed and documented the understanding of energy and energy conservation of 10 teachers and students aged 11-15 and observed that the majority of them had limited understanding of conservation. A total of 28 students who have already studied relevant ideas in physics was also investigated to trace the extent to which students used energy conservation ideas in solving both written and practical problems (Driver & Warrington, 1985). It was illustrated that the concept of energy conservation was rarely used in analyzing a problem. In a study by Solbes et al. (2009), a teaching sequence was designed and assessed to introduce the concepts of energy conservation for post-secondary students and revealed that the teaching sequence if combined with a methodology used in the classroom may effect a better understanding of law of mechanical energy conservation. Herrmann-Abell and DeBoer (2011) has involved 9739 middle and 5870 high school students and 176 university students to assess about energy concepts, energy transfer and transformation and energy conservation using a standard-based multiple choice format. The study revealed that the students had difficulties with items related to conservation and its application to a specific real-world.

In our contextual level, using the similar research instrument, 30 grade ten students were piloted in one of the middle secondary schools in western Bhutan to study the effectiveness of a low cost hands-on model embedded with the tenets of guided-inquiry approach (Wangdi, Precharatanna, & Kanthang, 2014, 2017). A year later, 100 middle secondary students were also investigated to find if they possessed scientific understanding of law of mechanical energy conservation using the guided inquiry laboratory (Wangdi, 2015). Both these contextual studies revealed the enhancement of the students' understanding using a guided inquiry approach. Even though this study has looked for conceptual change studies for teaching the law of mechanical energy conservation using the 5E learning cycle in the related databases, no directly relevant study was encountered. Hence, a 5E learning cycle embedded instructional unit which emphasizes hands-on activity for the students to involve directly with the specific task has been employed in the study.

### The 5E Learning Cycle

Whether it is due to the instructional setting or the experiences, the students already have pre-formed ideas regarding the scientific concepts. Such existence of the conceptual schemata, according to the constructivism is useful for the construction of the ideas in the new situation (Trumper, Raviolo, & Maria Shnersch, 2000). The teaching is likely to be ineffective unless teachers and curriculum materials consider the existence of learners' preconceptions. The principle of constructivist learning is such that students discover their own understandings through activity and our [educators] presence is only to facilitate this discovery (Cooperstein & Kocevar, 2004).

One such constructivist approach that caters to the students' meaningful learning through their prior knowledge is the 5E learning cycle. The 5E learning cycle includes five instructional stages namely engagement, exploration, explanation, elaboration, and evaluation (Bybee, 2002, 2009). The first phase of the 5E learning cycle is the engagement phase, where the teacher accesses students' prior knowledge and engages them in learning a new concept using some activities. These activities stimulate students' thinking and assist them to make connections between their prior and present knowledge, thereby helping them to organize the thoughts towards the learning outcome of the current activities.

In the *exploration* phase, the teacher provides students with a common set of activities in which it reflects their preconceptions, processes and skills. The students use their prior knowledge to generate new ideas, compare and explore questions and possibilities and investigate preliminary investigation.

In the third phase, *explanation*, the teacher focuses students' attention on specific aspects of their engagement and exploration experiences and provides opportunities for them to demonstrate their understanding, skills and behaviors. The students are involved in an analysis of their explorations and the teacher facilitates them to clarify and modify their understanding of the concept.

*Elaboration* is the fourth phase during which the teacher challenges and gives students the opportunity to expand and solidify their understanding of the concept and apply it in the real-world situations. Exposure to such new experiences help students to develop broader and deeper understanding and skills of the concept.

The last phase of 5E called *evaluation* encourages students to assess their understanding and abilities and provides opportunities for teachers to evaluate students' progress toward achieving the learning goals (Bybee, 2002, 2009).

### Methodology

This study which employed a quantitative research design was undertaken in one of the higher secondary schools in western Bhutan.

### Experimental Research Design

A pretest and posttest control group quasi experimental research design was employed in this study. 51 grade ten students who were involved in this study were divided into two groups: a control group (N=24) and an experimental group (N=27). A test questionnaire that consisted of 13 two-tier items was administered as a pretest for one hour forty minutes to both the groups that were assumed to have similar knowledge and understanding on law of mechanical energy conservation. The control group was taught using a conventional lecture method while the experimental group was taught using a 5E instructional unit designed for two hours. The implementation of the 5E intervention strategy followed the 5 phases of engagement, exploration, explanation, elaboration and evaluation (Bybee, 2002, 2009). After the 5E intervention and conventional teaching was over for both the experimental group and the control group, both the groups took part in the posttest for another one hour forty minutes. The posttest consisted of the same but reshuffled items of the pretest. The items were reshuffled to avoid or minimize the students' assumption of the answers based on arrangement of the pretest items.

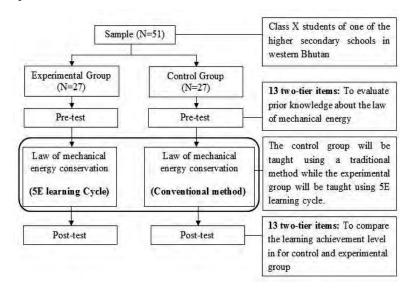


FIGURE 1: *Experimental research design*.

### Research Instruments

In this study, both instructional and research tools were used. The instructional tools included a lesson plan tailored on 5E learning cycle and student worksheets. The conceptual evaluation test on the law of mechanical energy conservation (CETMEC) was used as the main research instrument to investigate the students' understanding on law of mechanical energy conservation. The CETMEC which consisted of 13 parallel items in a form of two-tier multiple choice was used for both pretest and posttest.

In two-tier items, the first tier checks the knowledge of the student while the second tier tests the student's knowledge beyond recall and higher level of thinking (Cullinane & Liston, 2013). Of the 13 items, 10 items (except item 1, 7 and 12) were adapted from the American Association for Advancement of Science (AAAS, 1989). The items 1, 7 and 12 were self-created. The 10 items adapted from AAAS (1989) Project 2061 were in the form of multiple choice questions that were used to study the understanding of energy and energy conservation for grade 7-12. However, in this study those items were modified into two-tier multiple choice format. Those adapted items were either used to find the conceptual understanding in the first tier or to determine the reasoning and thinking skills in the second tier. But both the tiers were designed as a multiple choice that had only one correct answer.

The first tier consisted of true, false and 'I don't know' as the options. 'I don't know' was included to give freedom of choice for those students who do not possess any knowledge regarding the law of mechanical energy conservation rather than simply guessing it. The second tier consisted of five possible reasons to support the options the students have attempted in the first tier, but only one among these reasons was correct. The rest of the reasons were either the misconceptions gathered from the relevant literature (such as AAAS, 2016) or through the personal classroom teaching experiences. Even in the second tier, 'I don't know' was also included as one reason in order to avoid the guessing of students, which might bring error or misunderstanding in the analysis of the students' understanding.

The CETMEC was used during the pretest for both experimental and control groups, while it was also used in the posttest by reshuffling the items after the treatment of the 5E instructional unit (for experimental group) and conventional teaching (for control group). Table 1 shows how each item was constructed to measure the different constructs in this study.

**TABLE 1** *The three constructs and corresponding CETMEC items* 

Items	Constructs
1, 2, 3, 4, 9	Energy conservation
5, 6, 7, 8	Energy is created or destroyed
10, 11, 12, 13	Energy is transferred or transformed

### Validity and reliability

Most of the CETMEC items adapted for this study were already employed to investigate the students' understanding of energy transfer, energy transformation and the law of mechanical energy conservation (e.g. Herrmann-Abell & DeBoer (2011). However, in order to find the contextual applicability and standardization, these multiple choice items which were modified into a two-tier format for the purpose of this study were subjected to a panel of experts having a relatively higher knowledge and experiences in teaching physics for higher secondary schools.

A content validation was done by determining the Item-Object Congruence (Rovinelli & Hambleton, 1976) and all the items having an IOC index > 0.80 were accepted during the pilot study (N=30) conducted in 2014 (Wangdi, Precharatanna, & Kanthang, 2014, 2017) and later implemented to another 100 grade ten students in one of the middle secondary schools in western Bhutan (Wangdi, 2015). The reliability coefficient (Cronbach's alpha) obtained was 0.768 indicating that the items were favorable and reliable for the implementation (DeVellis, 2003; Tavakol & Dennick, 2011; Bland & Altman, 1997).

In order to assess the quality of the items, the item difficulty and discrimination index were also determined. An acceptable value of 0.7 for item difficulty and overall discrimination index of 0.47 was determined indicating that the items were valid and suitable for the implementation (Pande, Pande, Parate, Nikam, & Agrekar, 2013; Karelia, Pillai, & Vegada, 2013; Boopathiraj & Chellamani, 2013) and fell under the category of 'very good' items (Ovwigho, 2013; Sabri, 2013).

### Sampling

A convenience sampling method was used in this study. Such non-probability sampling procedure allows the researcher the freedom of choosing the informants based on the similarity of qualities (Tongco, 2007) or practical criteria such as availability at a given time owing to a geographical proximity and easy accessibility (Etikan, Musa, & Alkassim, 2016). Since the concept of law of mechanical energy conservation is introduced in the tenth standard of the Bhutanese curriculum, this study involved 51 grade ten students (experimental

27, control 24) studying in one of the higher secondary schools in western Bhutan. For the purpose of this study, the students were grouped into control and experimental group based on their class section.

#### Data collection

Prior to the execution of this study, approval from the school administration to conduct the study in the school and the students to be the participants of this study was formally sought. After their approvals, the study was scheduled to take place during school hours without posing any hindrances on their usual academic timings. The pretest using the CETMEC questionnaire was administered to both experimental and control group for 90 minutes before the intervention. After the pretest was over, the teaching of 5E learning cycle-based instructional unit on law of mechanical energy conservation was implemented to the experimental group for 120 minutes. For the control group, the same concept of law of mechanical energy conservation was delivered using a conventional lecture method for the same duration. Both the groups were then administered with the posttest that comprised of 13 parallel but reshuffled items for another 90 minutes.

#### Data Analysis

The data collected were analyzed using the t-tests. The means of the pretest and posttest for both the groups were determined to compare the learning ability on the concept of law of mechanical energy conservation for the experimental group that was taught using the 5E learning model and the control group which was taught using a conventional lecture method.

#### Results

The pretest and posttest were administered to both the experimental and the control group with an aim to make a comparative analysis on the students' learning achievement before and after the implementation of the 5E instructional unit in teaching the law of mechanical energy conservation. A statistical analysis for the mean score of pretest (Table 2) and posttest (Table 3) for both experimental and control groups were compared using t-tests which is presented below:

#### Pretest results

This study assumed that the learning ability on the concept of law of mechanical energy conservation for both the experimental and control groups being taken from the same parent population would be approximately equal. On the basis of this assumption, the null hypothesis (H0), for this study was that there would be no significant differences between the mean score of the

experimental and control groups in terms of their learning ability for the concept of the law of mechanical energy conservation i.e. H0:  $\mu$ 1 =  $\mu$ 2 where,  $\mu$ 1 and  $\mu$ 2 are population means of the experimental and control group respectively. The t-test analysis for the mean scores of pretests for both experimental and control group was examined as shown in Table 2. There was no statistically significant difference in the mean scores of experimental group (M=12.89; SD=1.84) and control group (M=12.33; SD=1.63; t(49)=(-1.13), p=.26). Since the calculated p value was greater than the significant level .05 (p>0.05), the null hypothesis was accepted. Hence, it was concluded that both the groups were homogeneous in learning ability based on the concept of law of mechanical energy conservation prior to the intervention.

**TABLE 2**Pretest mean scores of the control and experimental group

Test	Group	N	Mean	SD	t	Sig. (2-tailed)
	Experimental	27	12.89	1.84		
CETMEC	Control	24	12.33	1.63	-1.13	.263

<sup>\*</sup> Significant at the 0.05

#### Posttest results

The posttest which consisted of parallel but reshuffled items of the pretest was administered after the intervention of 5E instructional unit for the experimental group and conventional lecture method for the control group for 90 minutes. The posttest was conducted to compare if the use of the 5E learning model for teaching the law of mechanical energy has a significant effect in terms of student learning as compared to the conventional lecture method. Hence, the alternative hypothesis (H1) was that the mean score of experimental group would be higher than the mean score of the control group i.e.  $H1=\mu 1 \neq \mu 2$  where,  $\mu 1$  and  $\mu 2$  are the population means of the experimental and control group respectively.

Using an alpha level of .05, the independent-samples t-test revealed a statistically significant difference at t(-6.43) = 49, p< .05 as shown in Table 3. An examination of the group means for the posttest indicated that the experimental group (M=19.04, SD=2.12) performed significantly higher in the CETMEC than the control group (M=13.50, SD=3.61). This indicated that the learning on the concept of law of mechanical energy conservation for the experimental group was enhanced due to the treatment of 5E instructional model. The effect size using Cohen's d was calculated to determine the magnitude of differences between the mean scores of the two groups and was found to be moderate at eta squared = .45 (Cohen, 1992).

**TABLE 3**Posttest mean scores of the control and experimental group

Test	Group	N	Mean	SD	t	Sig. (2-tailed)	Cohen's d
	Experimental	27	19.04	2.12			
CETMEC	Control	24	13.50	3.61	-6.73	.000	0.45

<sup>\*</sup> Significant at the 0.05

#### Discussion

This study was conducted to investigate the effectiveness of the 5E learning cycle on students' understanding of law of mechanical energy conservation for grade ten students. The findings of the study revealed that the mean score of posttest for the experimental group (M=19.04, SD=2.12) where the concept of the law of mechanical energy conservation was taught using a 5E based instructional unit was comparatively higher than the mean score of the control group (M=13.50, SD=3.61) that was taught using a conventional lecture method. This difference in the mean score establishes that the 5E-based learning unit had a significant effect on enhancing the learning achievements for the students on the concept of the law of mechanical energy conservation. Thus, the statistical significant difference between the pretest and posttest score was due to the intervention and not due to chance.

The impact of having a higher mean score for the experimental group as compared to the control group may be explained due to the active participation of the students demanded at every stage of the 5E learning cycle. Another probable reason for this observed difference might also include the value associated with active learning activities during the 5E learning cycle instruction. This is also supported by Liu, Peng, Wu and Ming-Sheng (2009) that the 5E learning cycle is an effective hands-on and inquiry-based scientific pedagogy which can enhance students' scientific knowledge and understanding. The students in the 5E learning cycle for this study were actively involved in examining their preconceptions, exploring and elaborating by applying to newly constructed situations, and evaluating to construct more appropriate concepts (Piyayodilokchai et al., 2013) so that their conceptions are consistent with scientific understanding. On the contrary, such useful stages that helped the students to examine, contradict and restructure their conceptions were disadvantaged for the students in the control group that was taught using a conventional lecture method.

The traditional lecture-based teaching with books, chalk and board might have failed to offer same level of satisfaction and stimulation, participation and interaction and not encouraged to develop critical thinking as compared to teaching based on the 5E learning cycle. In this study, the students in the experimental group were observed learning the concepts of the law of mechanical energy conservation on their own, and through interaction using their pre-existing knowledge and everyday associated phenomena while the teacher was just a facilitator to that discovery (Cooperstein & Kocevar, 2004). In this modified constructivist approach teaching, social interaction which is the fundamental essence of Vygotsky's social constructivist theory was considered as one crucial aspect for knowledge construction, group discussion and interaction. In the presence of such activities, abstract concepts become meaningful and transferrable for the students to construct meaning (Cooperstein & Kocevar, 2004). In short, this study established that the 5E learning cycle was an effective intervention strategy for teaching the law of mechanical energy conservation. Such positive effects of the 5E learning cycle on enhancing the students' understanding of the scientific concepts were also reported in many previous studies such as Ercan (2014), Açişli, Yalçin, & Turgut (2011), Tural, Akdeniz, and Alev (2010), Yalçin and Bayrakçeken (2010) and, Hanuscin and Lee (2008).

This study found that there was no statistically significant difference in the mean score of both experimental and control group during the pretest. However, it was observed that there was a statistical significant difference during the posttest for both experimental and control groups. This finding was in keeping with the study by Cardak, Dikmenli and Saritas (2008) conducted with 38 sixth grade students in Turkey. The students' achievement in studying the circulatory system for both the experimental and control group were the same at first, but after the implementation of the 5E learning cycle, the success of students' achievement was observed in favor of the experimental group. A similar study by Hirça et al. (2011) asserted that there was a conceptual change in students and enhanced students' achievement due to the effect of guide materials based on 5E in teaching work, power and energy.

Another major finding of this study was the statistical significant difference in posttest scores of both the experimental and the control group. This finding shares the similarity with the claims of enhancing fifth grade students' understanding of force and motion concepts due to the treatment of the 5E learning cycle (Campbell, 2000). The achievement tests on movement and force issues for the first year students studying the General Physics Laboratory Course I in Atatürk University, Turkey, also revealed the existence of a meaningful difference between the groups in favor of the experimental groups. Even though this study has looked for conceptual change studies for teaching law of mechanical energy conservation using the 5E learning cycle in the related databases, no direct relevant study was encountered.

#### Conclusions

This study designed and developed an instructional unit on the law of mechanical energy conservation based on the tenets of the 5E learning cycle. The purpose of this study was to determine the effectiveness of the 5E learning cycle in teaching the law of mechanical energy conservation. Based on our findings, it was established that the 5E learning cycle embedded instructional unit significantly enhanced the students' understanding on law of mechanical energy conservation than the traditional lecture method. The students in the experimental group who were taught using the 5E learning cycle were exposed to the interactive and stimulating activities that emphasized on learning from their preconceptions and relating to the real life situations.

The activities designed based on the tenets of the 5E learning cycle have further excited the students to explore and elaborate with sufficient explanations for the situations they were introduced to. Such engagements have in a way encouraged the students to clarify their thoughts, correct their errors and reevaluate their existing preconceptions. The students had the opportunity to explain and relate their ideas and compare them with the new understandings so that they could accommodate the new concept into their schemata either through assimilation or accommodation. In short, this study indicated that the students' understanding of law of mechanical energy conservation was enhanced using the 5E learning cycle. In other words, the traditional method teaching that was largely teacher-centered and textbook-oriented revealed a minimal improvement in enhancing the students' conceptual understanding.

#### Recommendations

The results of this study suggest that the 5E learning cycle as an educational intervention strategy can be used in teaching scientific knowledge that often challenge and create misconceptions for the students. Though the empirical findings of this study limit its generalizability, they are consistent with the literature in suggesting the positive implications of the 5E learning cycle. Hence, classroom teachers can consider incorporating the 5E learning cycle which is based on constructivist approach in teaching other subjects than physics. As required in each phase of the 5E learning cycle, the activities must enforce collaboration among students and provide a platform to relate their prior conceptions to different situations, thus fostering a conceptual change.

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### Teachers' Opinions and Experiences in Educating Children with Special Educational Needs at Kamj Central School, Chhukha

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#### **Abstract**

In line with the philosophy of educating for Gross National Happiness in Bhutan, the special educational needs SEN policy was drafted by the Ministry of Education to introduce inclusive education for children with disabilities. With this, numbers of children living with disability were enrolled in schools which are recognized as SEN schools. However, there are many challenges that are associated with the SEN program. The aim of this study was to investigate teachers' opinions and experiences in handling children with special educational needs. The study was conducted at Kamji Central School under Chhukha district, Bhutan which was recognized as one of the SEN schools. A purposive sampling was used to select 31 teachers who possess basic skills on SEN services. The researchers used mixed method in this study. The quantitative data was analyzed using inferential statistics mean and standard deviation while the qualitative data was analyzed using a coding system. The findings from the study revealed that a majority of the participants were in favour of SEN program in the school. An average mean on participants' experiences in SEN service was 3.71, which showed that majority of the participants were aware of special education for child with disabilities and had basic knowledge of inclusive education. The study also revealed that SEN schools are facing challenges such as capacity building and professional development, revamping of assessment criteria for SEN students, over-loaded instructional periods for teachers and lack of job opportunities for SEN students.

**Keywords:** Special education, special education policy in Bhutan, opinion, experience

### Background

Education has become a part and parcel of children's lives in Bhutan. Under

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the grace of our visionary Kings, Bhutan introduced modern education as early as 1913. Education subsequently became compulsory and today education has become essential for survival. With recent drastic changes in the education policy, curriculum alignment and children's right on education, inclusive education has emerged as mandatory in Bhutan.

With the establishment of modern education in Bhutan at Haa as early as 1914, the number of schools in Bhutan gradually increased thereafter. As a result, the number of school going children increased year by year, including the children with disabilities. The first separate school for disabled children was established at Tashigang (Khaling) in 1973 to enroll students with disabilities. It was aimed to let every child acquire knowledge and skills joined with moral and ethical values to become good citizen (Dorji, 2005).

The SEN policy was drafted in line with the principles of Educating for GNH, an initiative supported and promoted by the former Education Minister Thakur S. Powdyel to promote Green Schools for Green Bhutan, and the Child Friendly School concept (MoE, 2011). The Convention on the rights of the person with disabilities (2010) states that "person with disabilities includes those who have long-term physical, mental, intellectual or sensory impairments which, in interaction with various attitudinal and environmental barriers, hinder their full participation in society on an equal basis with others" (p .1).

The Vision 2020 policy and strategy document by the Department of Education (2003) as cited in ECCD & SEN Division (2017) also states that:

all children with disabilities and with special needs – including those with physical, mental and other types of impairment – will be able to access and benefit from education. This will include full access to the curriculum, participation in extra-curricular activities and access to cultural, artistic, recreational and leisure activities. (p.5)

The education of children and young people with special educational needs and disabilities is now recognized as guiding principle in many countries. Despite this progress, there are also challenges as Bhutan is an under-developed country which has financial and human resources limitations to meet the goals of the 2020 policy and strategy document by the Department of Education, 2003.

Today, Inclusive Education Programs are available in 15 SEN Schools under 15 districts in Bhutan that provide SEN services to the students who are living with disability. Kamji Central School under Chhukha dzongkhag is also one of the mainstream schools catering SEN services to 23 students having learning difficulties, intellectual disabilities, low vision, hard of hearing and speech impairment (from mild to moderate).

At present the idea on the inclusion of children with special needs into

mainstream schools was one of the biggest educational achievements by the Ministry of Education of Bhutan, but this move worried many teachers as most of them lacked professional experience to handle the situation. Tharchen (2009) argue that, for children living with disabilities, it requires proper planning, infrastructure, human resource, dedication, and most importantly positive attitude from all the stake holders such as educators, policy makers, parents concerned and the children themselves. With the change of attitude of the society, future of children with disorders can be more harmonious and promising.

Despite many challenges, the ECCD & SEN division under Ministry of Education has put in hard work and dedication to include those children who are living with disorders into the mainstream schools to give them a platform whereby that group of children will feel respected and enjoy their life at full potential. The introduction of inclusive education for child with disabilities has helped many children who are left far behind comparing to normal children

Chhetri (2015) stated that, despite the challenges faced by the teachers in the mainstream schools, it also helped those children with special needs to experience the general educational settings with other children which encouraged them to participate more and let them feel proud of being included in the society. Similarly, Dorji (2003) also felt that the rationale behind the introduction of inclusive education in Bhutan was to refine and make them independently stable, which would enable children to be happier citizens. Children with disabilities can derive the skills through education that helps the child to refine their potential. This would serve them to get a job whereby they can be independent, and thus contributing to the development of the country (MoE, 2011).

Under the strict vigilance and supervision from the ECCD & SEN division under the Ministry of Education, the SEN services are going well in all the schools. The Ministry also initiated many professional development programs to build the capacity of teachers to handle students who are living with disabilities. However, it is still felt that there are many things that need to be done to improve this program.

In spite of its importance, there are no practical studies conducted on the introduction of inclusive education for children with disabilities in Bhutan. Gathering and assessing teachers' perception and views are essential in this type of educational setting to improve planning in future. So in this regard since not many studies were done in Bhutan with regard to the inclusive education for child with disabilities, the researchers aimed to investigate teachers' opinions and practical experiences in handling children with special educational needs.

#### **Objectives**

- To investigate teachers' opinions on the introduction of the SEN Program in the schools.
- To assess teachers' field experiences and knowledge on the SEN Program in the schools.

#### Research Questions

- 1) What are the opinions of the teachers with regard to the introduction of SEN Program in the school?
- 2) What are the practical experiences of teachers on SEN Program for children with special needs?

#### Research process

The researchers obtained an approval from the principal of Kamji Central School, Chhukha, Bhutan to conduct the research. After seeking the permission from the principal, the researchers prepared instruments and conducted the study.

#### Population and Sample

Population in this study comprises of 31 teachers of Kamji Central School, Chhukha. The researchers used purposive sampling and selected 31 teachers of Kamji Central School. The samples were selected since they possessed basic knowledge on SEN and currently handled special educational need students.

#### Research instruments

The researchers used semi-structured interviews and survey questionnaires to collect the data. The opinions shared by the participants in the semi-structured questionnaires were analyzed by using a coding system based on the grounded theory of Strauss and Corbin's (1998). The Mean and Standard Deviation were used to interpret the result of the study. The survey questionnaires were prepared using five point Likert Scales which was mainly focused on teachers' experience on the SEN program.

#### Data analysis

The data obtained from the survey questionnaire were compared in terms of mean  $(\overline{x})$  and standard deviation (SD).

Further, the data collected from structured interview was analyzed by using a coding system (open, axial, and selective) based on the Grounded Theory of Strauss and Corbin (1998).

### 1. Analysis of survey questionnaires for teachers experience with (SEN) program

**TABLE 1** *Mean and standard deviation of survey questionnaire.* 

Sl. No	Statements	N	Mean	Std. De- viation	Experi- ence level
1	The introduction of inclusive education in the school was a good move by the ECCD and SEN Division, MoE.	31	4.23	0.884	I agree to some extent
2	Students with special need have the access to all round education with the implementation of IEP	31	3.29	1.006	I slightly agree
3	Children with special need have better future prospective from IEP	31	3.84	0.735	I agree to some extent
4	Every child gets equal opportunity in the IE Settings	31	3.58	.958	I agree to some extent
5	Professional development programs initiated by the SEN division has helped teachers who are handling them	31	4.00	0.966	I agree to some extent
6	TLM designed for children with special need benefited them to keep physically fit and to grow academically.	31	3.65	.950	I agree to some extent
7	Push-in and pull out services scaf- folds students learning	31	4.00	.391	I agree to some extent
8	Community involvement in such activities are highly recommended to bring students-parent bond	31	4.06	.727	I agree to some extent
9	Teachers have the capacity to handle children with disabilities in IE school	31	2.90	0.790	I slightly agree
10	The SEN Division and ECCD have initiated lots of professional programs to run the SEN program in the country	31	3.55	.961	I agree to some extent
	Total	31	3.71	0.836	I agree to some extent

*I=strongly disagree. 2= not sure. 3= I slightly agree. 4=I agree to some extent. 5=I strongly agree.* 

It is evident from table 1 that the overall rating in all the 10 items by the participants with regard to their experience on the SEN program in the school was significantly high with an average mean of 3.71. This clearly showed that majority of them were in favor of inclusive education for children with disabilities in the schools. For instance, the mean for statement number 1 and 5 were 4.23 and 4.00 respectively which confirms that they welcome such educational reform initiated by the ECCD & SEN division under Ministry of Education. Therefore, the result analyses of questionnaires on the participants' experiences of the SEN program in the school showed that majority of them were aware of the SEN services in the school. Hence, it can be concluded that the introduction of inclusive education for child with disabilities in the mainstream schools can be regarded as effective to deliver equal educational opportunities for all the children irrespective of their disability.

However, it is clear that most of the participants were skeptical about statement number 9 as many of them were not sure whether they are fully equipped with SEN knowledge or not. The varying reasons could be due to limited professional background to deal with children who need special care and guidance as professional development programs are limited to very few and selective teachers due to financial constraints.

# 2. Analysis of the semi-structured interview for participants' opinion on (SEN) program

The data collected from participant's semi-structured interview was analyzed by using a coding system (open, axial, and selective) based on the Grounded Theory of Strauss and Corbin, (1998). Firstly in the open coding, the data from participants' semi-structured interview was organized systematically. Then the data was identified and categorized using axial coding. Finally selective coding was used to categorize and interpret the data collected from the participants. The researchers used six following core themes from the participant's semi-structured interview as explained below:

- 1. Capacity building & professional development
- 2. Revamp assessment criteria for (SEN) students
- 3. Over-loaded instructional periods for teachers
- 4. Role of community and student-parent bound
- 5. Lack of job opportunities for (SEN) students
- 6. Co-relation of GNH and inclusive education

### 2.1 Capacity building and professional development

Majority of the participants are of the opinion that skilled manpower should be given importance in the mainstream schools as it will not compromise the quality of education for children with special needs. It was felt that capacity building and professional development for teachers in the (SEN) program schools are mandatory for providing effective service. The participants also reflected that Bhutan do not have fully trained teachers to handle children with special needs. At the moment, most of the SEN related programs are carried out with the support received from other countries especially in the field of skilled man power, financial and other resources. Capacity building is the top most priority because training of necessary skilled personnel would adequately meet the needs of students with disabilities. As a result of improved networking and training, teachers will be in a comfortable position to implement special educational practices and to promote the establishment of special education ideologies in the mainstream school setting.

#### 2.2 Revamp assessment criteria for (SEN) students

The participants also claimed that teachers were dissatisfied with the summative assessments as overall academic achievements at the end are compromised due to the inclusion of children with disabilities among others. In line with this, the respondents suggested that children with special needs should either be in a separate school that can address their problems or train special tutors to teach them.

### 2.3 Over-loaded instructional periods for teachers

The respondents argued that teacher are extremely overburdened with teaching periods besides having to handle students with disabilities such as push-in and pull-out classes. Teachers are also assigned with other school responsibilities which affects in providing (SEN) services ultimately hampering the learning of the child who needs extended support.

### 2.4 Role of community

The participants reflected that the mindset of the community should change and their attitude should be welcoming so that children living with disabilities will not feel neglected. With the support from the community, these children has the ability to feel the worthy of themselves, build self confidence and develop high self esteem which will ultimately boost their hidden talents. Despite the fact that children are given optimum care, guidance and assistance by their parents and teachers, there is a greater role to be played by the community and society at large. Children living with disability should not be stigmatized with the notion that they are disabled. Instead community should render helping hand to get rid of stereotypes and taboos in the world of 21st century.

### 2.5 Lack of job opportunities for (SEN) students

Based on the responses made by the participants, Bhutan is currently facing difficulties to provide accurate job to those disadvantaged children. Moreover in the present situation, the government is not in a position to provide job for all the disabled children as they lack the required skill needed in the job market. Thus, preparing children with adequate skills required in the job market and in making education more accessible for those disadvantaged children are some of the challenges that will or is facing as of now. Therefore, the futures of children who live with disability are bleak despite their little skills learned in the school. But on the other side, if the disabled child is capable of achieving the required mandate expected by the government, it will help in the capacity building and economic development of the country by using the skills and knowledge that they have gained.

#### 2.6 Co-relation of GNH and inclusive education

According to what the participants has responded, Bhutan being a country pursuing happiness fulfils one of the mandates by introducing inclusive education. The move on the inclusive education by the Ministry of Education has become a blessing for disabled children. Stepping in towards inclusive education is holistic, mankind and our disabled children came to realize that there is a place for them to be counted as educated. In fact the philosophy of GNH is prioritizing on happiness of all the citizen of the country and enabled children with disabilities raise their voice and express their emotions.

#### Conclusion

This study was aimed to investigate teachers' opinion on the introduction of (SEN) Program in the schools and to assess teachers' field experiences and knowledge on (SEN) Program in the school. The result of study showed that the participants were in favor of (SEN) program. They also had some knowledge on inclusive education and basic ideas to handle children with disabilities.

However, it was also revealed that (SEN) school is facing challenges like capacity building and professional development, revamping of assessment criteria for (SEN) students, over-loaded instructional periods for teachers and lack of job opportunities for (SEN) students. This result supported the findings of Chhetri (2015), Tharchen (2009), and Feng (2010); who conducted similar studies on (SEN) program.

To conclude, the convention on the rights of the person with disabilities (2010) states that all people living with disability are the ones who have disorder and afflictions which hinders their potential to showcase in the society. Therefore, to overcome such barriers (SEN) programs in the schools will guarantee them

to experience the real world without discrimination. It will also scaffold them in lifelong learning and inspire them to join the society at large without any hesitation in the world of 21st century.

#### Recommendations

The special educational needs policy which was drafted in line with the principles of Educating for GNH, an initiative supported and promoted by the former Ministry of Education, Thakur S. Powdyel to promote Green Schools for Green Bhutan, and the Child Friendly School concept MoE (2011) was acknowledged in this study. However, few recommendations need to be made with Ministry of Education and civil society in Bhutan.

- 1. The Education Ministry needs to focus more in creating reliable future scope and opportunities for those disabled children.
- 2. In order to heighten inclusive education in the country, parents should be involved to play important role to influence (SEN) students.
- The study also recommends the Ministry of Education to provide relevant professional development opportunities for teachers such as providing exposure training outside of the country and also initiate exchange programs to infuse good practices in the context of Bhutanese education system.
- 4. Finally the study recommends the Ministry of Education to provide joboriented educational skills to children with special needs for the security of their future. Moreover infrastructure facilities for special educational needs should be provided. The study also recommends MoE to create awareness to all section of people and children living with disabilities.

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रैबॱळेबॱळें'न्नर<sup>ः)</sup> न्ययायर्चेर<sup>्</sup> यळे'सेन्'रैगायद्देव<sup>५</sup>'न्नः यशुरसेन्'यर्धेब'यम्

### ন্তুন:ৰ্নুৰা

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# ดิจานฮั้ณ ฮิ รุลิขุพ รุ๊สุ Research Intent

# १.१ दियःपर्कूलःमीःमैयःपिरश

क्षं, योषटश्व. - ट्यां ह्यां ट्टल्लुयां ह्यां यावेश्व अक्ष्यः प्रत्यं व्यक्तं त्यां विट्यं या।

क्षेत्रं योषटश्व. - ट्यां ह्यां ट्टल्लुयां ह्यां यावेश्व अक्ष्यः क्षेत्रं विट्यां त्यां त्यां विट्यां विट्यं व

# र्क्क्षेत्र'स्कुं,त्यु'देख'यर'दिवेव'चदे'त्यु'दग्रव'गुर्डं'चें'ङेग'छेब'यश्रा

# १.१ विचादर्केषःग्वर्नःर्देवःग्रयायम्

म्ने अम्हरकालकः वृत्तायकूलायद्वीत्तायद्वीत्त्री स्वास्त्र अपकालक्ष्यात्त्रीत्ता स्वास्त्र स्वास्त

### १.५ विच पर्केषा मी दर्गेषाया

# १.८ बिचायर्क्स्यामी:द्वीःपा

### इ.य.बार्ड्स्य्

ર્સ્સિવઃસ્થાર્મેદઃવચેવઃ' ५८'વલિવા છે. સ્સિવઃસુંષા' સું' વા સું' વા સું' વા સેંદા' વા સેંદા' વા સે માં વા પ્રાય વસુરાવા વા વા કે સે ત્રાવકુષા? વર્કે ભું ૧ વર્દ હુષા અલવક સેવે સું સેંદ્ર વા સેન્ટ વર્દ પણ

### षदःचमामि:इ:न।

- य). र्वे अँदे नुष्टे न शु नहें द हैं नायदे दर्वे सूना शु त शु र न ना ने से तर् न?
- द्र). र्र्भुच-रेअ-५८-एव्वेथ-र्र्स्ट-विदे एव्वे व्युज्जा-त्यु-रच-ना-दे से प्दर्जा?
- ८). र्श्वेन'मृतिकम्बाधन्याथु'नहेर् हेर्'हेर्'मत्ते'त्रची'भ्रुम्'सु'त्रयुर्-न'म्'हेसे'तरुम्?
- ૫). હ્યુદર્જીન્ય જૈ:હુદ્દાયર હ્યું વहેં ક્રિક્શિયર હ્યું ક્રિનાયર હ્યું ક્રિયાયર હ્યું ક્રિનાયર હ્યું ક્રિનાયર હ્યું ક્રિયાયર હ્યું ક્રિયાયર
- હ). યમાં માં મુન ર્સુંત્ર ભું વहેર કે 'ફે' ફેંદ ાયતે તરે કે 'ફુ માં ભું તર્ સુત્ર ન માં કે 'સે 'વર્ડ્ મ?
- a). वार्षवा वी अरु ब त्याया त्यु प्रहेब हो हें रायते त्य ही भ्रूवा त्यु र त्या हो स्ट्री तर्ज्वा ?

# १.५ विच पर्कें वा मी में प्रमा

### র্ট্রম'ন্সু-ক্রিনা Literature Review

### 4.0 至到5

लट. र्ड्स न्नेश नश्चर तन्ने के प्रचार के जो स्टायप्त तन्ने निस्ति के स्टायप्त तन्ने के प्रचार के प्रचार के प्रच स्टायप्त तन्ने त्यने त्यने त्यने का क्टर प्रचायश्य के त्या के त्यने त्यने त्यने त्यने त्यने त्यने त्यने त्यने स्टायप्त तम्मे के त्यने त

### ४.७ हॅटावदीपडीख्यामीर्गेर्न्त्

र्ह्स्तावतः त्रचे : क्ष्मा चेर्यतः क्ष्मा चर्याः ह्रित्यावतः क्षेत्रः क्षेत्रका क्ष्मा च स्त्रावतः क्ष्मा चर्याः क्ष्मा च स्त्रावतः च स्

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Wood (2004) મીચાયુદ્ધદેષ ત્વર્ગ સે ત્ર-Cambourne(1988) મીચાયવદ્ધા રેતું સ્વ મુત્રે મુત્ર સ્વાય સુંદ્ર સ્વર્ગ સુંધ્રા ક્ષાય સુધ્ર સુધ્ર સુધ્ય સુ

६म्। तयन् वेति में। देशः कुं त्यञ्चे वेति त्यस्य स्थानसः हैमा स्थिवः ज्ञेसः चति स्थेससः सुमानसः चर्त्रीः चर्त्र चन्द्र-देश्वर्त्ते (DCELLS, 2010)।

### ४.५ हॅटावदेखि:स्रुगावमाकेन्द्रिमा

स्रेट्ल्यास्टरः वट्ट्र्य्ट्र्यानाः इतः क्रिक्ट्र्याविटः यान्यः स्रेट्र्याक्ष्ये, स्ट्र्यः क्र्याः वच्चे स्र्याचित्रः वट्ट्र्यः स्राम्यः स्रेट्र्यः स्र्याः स्रिट्र्यः स्र्याः स्रिट्र्यः स्र्याः स्रिट्र्यः स्रिट्यः स्रिट्र्यः स्रिट्र्यः स्रिट्र्यः स्रिट्र्यः स्रिट्र्यः स्रिट्य

# त्रचे'ते'भ्रुग'ते'त्रने'षीत्रव्य'त्यन्'ग्र्युर्व्य'तुग्।

स्थित्र प्रस्ते त्य क्षेत्र प्रस्ते त्य क्षेत्र प्रस्ते त्य क्षेत्र प्रस्ते व्यक्षेत्र प्रस्ति क्षेत्र प्रस्ति विद्यक्षेत्र प्रस्ति क्षेत्र प्रस्ति क्षेत्र क्षेत्

### ४.४ हॅरायते त्रे स्वा मे मार्य कर्ष द्राप्त कर स्वर्थ

Namgyel (2001) ग्रीस प्रांति की हिंदामदे त्य ही की स्वांति की की स्वांति की

ड्रम्।लश्चांश्चर्स्टटः श्लट्सेट्-भ्रैंस्वांलश्चिक्कालश्चींश्चराक्षाः चिक्वालश्चराक्ष्मं श्लेस्वर्यस्य विक्वालश्चर्यस्य विक्वालश्चरस्य विक्वालश्चर्यस्य विक्वालश्चर्यस्य विक्वालश्चर्यस्य विक्वालश्यस्य विक्वालश्चर्यस्य विक्वालश्चर्यस्य विक्वालश्चर्यस्य विक्वालश्चर्यस्य विक्वालश्चर्यस्य विक्वालश्चर्यस्य विक्वालश्चर्यस्य विक्वल्यस्य विक्वालश्चर्यस्य विक्वालश्चर्यस्य विक्वालश्चर्यस्य विक्वालश्चर्यस्य विक्वालश्चर्यस्य विक्वालश्चर्यस्य विक्वालश्चर्यस्य विक्वालयस्य विक्वालयस्य विक्वालयस्य विक्वालयस्य विक्वालयस्य विक्वा

योष्ट्रस्थितः व्हें . चेहे खुनायन् ने न्निस्न . क्रूं स्वेतायने स्वीत्यायन स्वीत्यायन स्वीत्यायन स्वित्य स्वात्यन स्वित्य स्वित्य स्वात्यन स्वित्य स्वात्यन स्वित्य स्वात्यन स्वात्य स्वात्य

र्ट्स्य-वायप्तयम्, ४०००। १ विष्याः स्ट्रिय्यन् भ्रित्याः स्ट्रियः प्रमान्त्रः स्त्राः स्त्रः स्त्राः स्त्रः स्त्र

# ४.८ हॅरावते'तर्चे'सूगागो'र्गेअ'तर्देश'सेन्य'चन्ररसिते कुंग्नेता

ને વન્ન સ્ત્રાપ્ત સ્ત્ર સ્ત્ર સ્ત્ર સ્ત્રાપ્ત સ્ત્ર સ્ત્

# थार्वि के नदी कुन र्रेट्टिंग छोद बेर नर्गे द स्वा

# ४.५ हॅटायदे तर्चे स्वा प्यरः मुखः गहरः घरका

Choden(2008) मैश्रास्टित्यहेत् ययन् श्री द्रामावा(2002) मैश्यायन् या हैतः कृषा श्री द्रामाव दिया क्षेत्रा त्रामाव विवास क्षेत्रा त्रामाव क्षेत्र क्षे

ने अंकि 'Choden(2008) मी अंत्यन् प्रकृत स्त्रीं त्यों 'द्रिक प्रकृत स्त्रीं प्रकृत प्

Mwoma (2017) 'শীঝ'ঝ্র'ঝরর র'ঝনর' Strategic Marketing and Research (2013) 'শীঝ'ঝনর'ন' উর'ঝরর'ঝরর'ন্ট্র্যা'ডর'শ্রী'শ্রুশ'শী'শ্রুন'ঝর্ঝ'নর্দির'র শির্মা'

डेवः र्श्वेनःसुगार्द्यनिकुर्धः दिन्द्रोधः । स्वामी स्वाधः स्वाधः स्वाधः स्वाधः स्वाधः स्वाधः स्वाधः स्वाधः स्व इतः सुनः सुनः सुनार्द्यः में सुन्द्रः सुन्द्रोधः । स्वाधः स्वाधः स्वाधः स्वाधः स्वाधः स्वाधः स्वाधः स्वाधः स्व

Douglas (2009) 'मैश'स्ट्रिंद्रदेव'दवर्'श्चेर्द्र' Luke र्र Freebody (1999) मैश' दवर्'चेक्ट्रिंद्र' हेक्ट्रिंद्र' प्रवापा केट्र' देवे स्थापत केट्र' केट्रेंद्रे केट्र' केट्रेंद्रे केट्र' केट्र' केट्रेंट्रेंट्रेंट्र' केट्र' केट्

तच्चै ते न्न् न्युवा ते ति ने विश्व विश्व

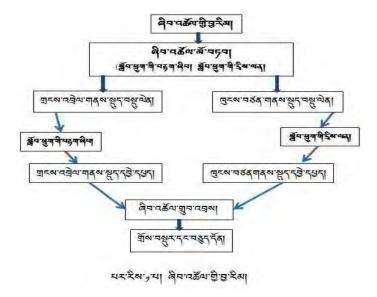
त्रञ्जे तै त्रिन् भून दे ते अर्थे क्ष दुष सुग्व अर्थे अ देग क्षेत्र अ त्र त्र सुग् हुं क्षेत्र त्र अर्थे न्य अर्थे अर्थे विद्य त्र क्षेत्र त्र अर्थे न्य क्षेत्र त्र अर्थे न्य क्षेत्र त्र क्षेत्र क्

### ব.৫ বস্তুর্বাস্থ্রমা

### ন্বীন'বের্ক্টিঅ'ষ্রনশ'অমা Methodology

### 4.9 至到5

र्नेत्रक्षत्र-प्रतिविधसःपः विचायर्क्षव्यायप्त्रेत्वरः व्याप्त्रायः विचायर्क्षव्यायः विचायर्वयः विचायर्क्षवयः विचायर्क्षवयः विचायर्क्षवयः विचायर्क्षवयः विचायर्वयः विचायर्वयः विचायर्वयः विचायर्वयः विचायर्वयः विचायर्वयः विचायः विचायर्वयः विचायः विचायर्वयः विचायः वि



### ব্ৰব্ৰ প্ৰব্ৰহাঞ্

### ४.२.१ ५मे र्क्

ઌૹ. ૹૢ૽ૺૢૻ<sup>2</sup><sup>4</sup>િ વન્ટ-શુદ્ધું જ્વેષ્ય: નહ્યું હુષ્ય: શું ત્વારા કું નિર્ચા સું તાત્ર કું તાત્ર સું તાત્ર કું તાત્ર સું તા સું તાત્ર સુ સું તાત્ર સું તાત્ર સું તાત્ર સું તાત્ર સું તાત્ર સું તાત્ર સ સું તાત્ર સ 

### ४.४.४ मार्काःसून्यसुःयेवा

णका चर्की जुषा प्रचान लूरी ताला वा विष्ठा प्रची प्रचान हुं स्वाप्त प्रचान हैं स्वाप्त प्रचान हुं स्वाप्त स्वाप्त

# द.र.द ग्रदशस्त्र राष्ट्री

स्वान्त्रीं स्व्यंत्रीं चें न्यं न्यं स्वान्त्रीं स्व

# इ.द क'वर्हेण'55'र्ह्हे'ग55|

बैच<sup>,</sup>पर्कें व, पर्द, मी, बीच, पर्वे, क, वाष्ट्र क, वाष्ट्र

ह्मा,जन्नान्तर्मे,जुन्ने,यनर्म्ज्ञा र्म्मा,जन्मन्तर्मे,जुन्ने,यनर्म्ज्ञा राम्मान्तर्मे,जन्ने,यन्ने,जन्मान्तर्मे,जन्मान्तर्मे,जन्मान्तर्मे,जन्मान्तर्मे,जन्मान्तर्मे,जन्मान्तर्मे,जन्मान्तर्म्मान्तर्मे,जन्मान्तर्मे,जन्मान्तर्मे,जन्मान्तर्मे,जन्मान्तर्म्मान्तर्म्मान्तर्मे,जन्मान्तर्मान्तर्म्मान्तर्म्मान्तर्म्मान्तर्म्भान्तर्म्मान्तर्म्भान्तर्म्मान्तर्म्भान्तर्म्मान्तर्म्भान्तर्म्मान्तर्म्भान्तर्म्भान्तर्म्मान्तर्म्भान्तर्म्भान्तरम्भान्तर्म्भान्तरम्भान्तर्म्भान्तर्म्भान्तर्म्भान्तर्म्भान्तरम्भान्तरम्भान्तर्म्भान्तर्म्भान्तर्म्भान्तर्म्भान्तर्म्भान्तर्म्भान्तर्म्भान्तर्म्भान्तर्म्भान्तर्म्भान्तर्म्मान्तर्म्भान्तर्म्भान्तर्म्भान्तर्म्भान्तर्म्भान्तर्म्भान्तर्म्भान्तर्म्भान्तर्म्भान्तर्म्भान्तर्म्भान्तर्म्भान्तर्म्भान्तर्भान्तरम्भान्तर्भान्तर्भान्तर्म्भान्तर्भान्तर्म्भान्तर्म्भान्तर्म्भान्तर्म्भान्तर्म्भान्तर्म्भान्तर्म्भान्तर्म्भान्तर्भान्तर्भान्तर्म्भान्तर्भान्तर्भान्तर्भान्तर्भान्तर्भान्तर्भान्तर्भान्तर्भान्तर्भान्तर्भान्तर्भान्तर्भान्तर्भान्तर्भान्तर्भान्तर्भान्तर्भान्त्रम्भान्तर्भान्तर्भान्त्रम्भान्तर्भान्त्रम्भान्त्रम्भान्त्रम्भान्त्यत्रम्भान्त्रम्भान्त्रम्भान्त्रम्भान्त्रम्भान्त्रम्भान्त्रम्भान्यस्भान्त्रम्भा

# यः गुरार्श्वेराह्यागवणा

लमः विषयः क्रीन्त्रकृत्यं स्वात्त्रकृतः स्वात्त्रकृतः स्वात्त्रकृतः विषयः प्रत्यात्रकृतः विषयः स्वात्त्रकृतः स्वात्तः स्वात्त्रकृतः स्वात्त्रकृतः स्वात्त्रकृतः स्वात्तः स्वात्त्रकृतः स्वात्त्रकृतः स्वात्त्रकृतः स्वात्त्रकृतः स्वात्त्रकृतः स्वात्त्रकृतः स्वात्त्रकृतः स्वात्त्रकृतः स्वात्त्यः स्वात्त्रकृतः स्वात्त्यः स्वात्त्रकृतः स्वात्त्रकृतः स्वात्तः स्वात्त्रकृतः स्वात्तः स्

### র্ণ বহুই,বহুরা

स्र्रीयः यात्रायः स्तर् देत्रे द्वारा स्वार्थः वात्रायः स्वार्थः यात्रायः स्वार्थः स्वरं स्वार्थः स्वार्थः स्वार्थः स्वार्थः स्वार्थः स्वार्थः स्वरं स्वार्थः स्वरं स्व

### ন্বিন'বর্কুঅ'রাব্রমা Results

### en F

मार्थुश्वःक्षःसः मार्थाराः क्षेत्रः यत्तरः ने स्त्री ।

पत्रेत्वरः मार्थः यद्देशः मार्थः यद्देशः वित्रः वित

### ८.१ वरुतः सरः महिंगश्रासितः मुस्यः र्सुत्या

चरुतःसरःमहिंग्रसःसदेःग्रह्भःदिः हुंतःन्देः र्श्वेचःस्याःम्यस्यः र्श्वेदःस्य-नेधः र्श्वेदःस्यः र्श्वेदःस्यः र्श्वेदःस्यः र्श्वेदःस्यः र्श्वेदःस्यः र्श्वेदःस्यः र्श्वेदःस्यः र्श्वेदःस्यः

ट्रे.ब्र्युं, प्राच्याया तट्टे, हुचा जिश्रा भेरा बेट हुंबे हे. लूटी सूच चेतु, श्राप्त प्राच्या के प्रत्य प्राच्या हुच विची जिट हुंची श्राप्त चेता त्राप्त प्राच्या हुच. ४००% ट्रंट. सूच चेतु, श्राप्त प्राच्या के प्रत्य प्राच्या क्ष्य प्रत्य प्राच्या हुच विची हुच प्रत्य प्राच्या क्ष्य प्राच्या क्ष्य प्रत्य प्राच्या क्ष्य प्राच्या क्ष्य प्रत्य प्रत्य प्राच्या क्ष्य प्रत्य प्

वैगाष्ट्रस्य १०.२। इसम्पर्के र्वेदे वर्दे द्रम्य चलि द्रम्य चले सम्बन्ध

	र्थे सें	ર્શેવ:રેથા	र्श्वे.चीयु:स.चीयस्री	र्श्वेतःयुदेःशुटः र्श्वेगशा
Valid N	<b>५</b> ७५	466	460	469
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য়৾ঀ<sup>৽</sup>ঢ়য়৻<sup>৽</sup>ঽ৸ ড়৻ড়৻৴ঀৣ৾৽৸৻৴ৼড়ঀৢ৾৵৽৸৻৸৾

	ম'শ্ৰহ্মা	বর্মী.ঞ
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क्यावट्यम्पिर्देण्ट्री १९ या.कुट्यम्पिर्देश्यायक्चिर्यः चक्किः स्थायि क्षेत्रः स्थायि व्यक्तिः स्थायि व्यक्तिः स्थायि व्यक्तिः स्थायि स्थाय स्थायि स्थायि स्थायि स्थायि स्थायि स्थायि स्थाय स

चैना'त्रअ'<sub>व</sub>'य। र्क्केन'देश'दराखेश'चरी'चरुत'स्यर'महिन्य'से'क्केन्य'स्वा'नी'ग्रुरअ'या

	र्श्वेच:देवा	<b>ঐ</b> :শ্র <b>েশ</b> ।	বক্সু'ক
	ସନ୍ଧି'ଧା	320	26.p
	<u> च</u> ृण:या	२०७	36.6
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ह्माब्दाम्योत्त्री व्याप्ति विकाशी स्थित्या स्थान्त्रीय स्थान्य स्थान्त्रीय स्थान्त्रीय स्थान्तिय स्थान्तिय स्थान्त्रीय स्थान

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		<b>র</b> 'শু<শা	বক্স:কা
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	<b>ল</b> প্ৰ, লেখা.ট্ৰ্পা	34	હ.પ
	প্রষ্ঠ প্রহা	336	ક્ૄાપ
	বুর্ষ্থ্র	460	ه.م
Missing	System	ч	0.6
Total	<u> </u>	<u> </u>	100

য়৾ঀ৾ঀড়য়<sup>৻</sup>৸য় ৻ঀৼ৾৾ড়ৢ৾ঀড়৽ৼৼড়৾ঀয়৽য়৻ৼ৾য়ৣ৾য়৽য়ৢঀ৽য়ড়৻য়য়ৼ৽ঀঢ়৾ঀড়৽য়৻৻ঢ়ঢ়ৼড়৽ঢ়

	<u> এ্</u> দৰ্শ্ভিল্ম।	ঐ'শু<শ∣	বক্∂.ছ
	পুই:ব্রিমাঝা	204	23.6
	क्षें खेंग्रह्म	<b>e</b> q6	40.6
Valid	ৰুব শ্ৰুমানা	त्रथि	33.0
	<b>इंटर्स्स्या</b> र्था	30	<b>4.</b> 6
	Total	469	ט.מא
Missing	System	3	ه ٔ ه
ন্ধূ	মকা	<b>५</b> ९५	100

# ८.४ र्श्वेन'स्यायी'यात्र अरस्त प्रेन हो'न्छन्।

मुल्'नवलग'र्से, प्र्ट्मी,नम्बन्यस्य प्रक्रम्,क्री.विस्त्रम्,वानस्य प्रक्रम्,वानस्य प्रक्रम्य प्रक्रम्,वानस्य प्रक्रम्,वानस्य प्रक्रम्,वानस्य प्रक्रम्,वानस्य प्रक्रम्य प्रक्रम्य प्रक्रम्य प्रक्रम्य प्रक्रम्य प्रक्रम्य प्रक्रम्य प्रक्रम्

ॻॖऀॱॻऻॺॴॱख़ॖॸ॔ॱॸ॔ॱॱॺॣॖॕॻॱख़ॖ॔ॻॱॻॏॱॻढ़ॻॱढ़ॊॻॱॾऀॱॻॱॺॸॱॺॗॖऀॸॱॻऻढ़ॸॱॻॺॴॱय़क़ॸॱॻऒ॔ॸॎ॔ऄॱख़ॖ॔ॱॴॸॱॻॺॢॱऄॗॗऀॻ य़ॻॸ॔ॱॸ॔ऄॖॱॸ॔ॖॖॖॖॖॸ॔ॱॻॖऀॱॸॣॕॺॱख़ऻॻॱज़ॖॺॱख़ॿॻॱॾॖऀऻॱॻऻॺॴॱख़ॕॖॱॸ॔ऄ॒ॱॸ॔ऄ॒ॱॸ॔ऄ॒ॱय़ख़ॸ॔ॱख़ॱ ॻऻॺॴॱॡ॔ॻॱज़ॺॱॺॸॱॻॺ॔ॸॱज़ॣ॔ॸॻॱॹॖॺऻ

## <u>६.४.७ क्व</u>ेंप'सुग'गे'यहग'बैय'ई'परिंग्वस्थ'सूर'र्छे'र्छर्।

अक्टूबर् ह्रेंबेश अश्रा विचाल त्रात्ते मुंचाल का मुंचाल

ष्ट्रेन'ख्य', म्प र्श्वेन'ख्य', में 'द्वे'त्रुक्ष' ग्रन्थ' से 'से 'त्रुवेत' तुं 'ग्रुवे 'ग्रुवे 'युं '(Mean)' ५८' (SD)।

	11011			
	ই'বই'র্ঝ'শ্র্নঝ	N	Mean	SD
1	ૹૣ૽ૼૼૼૼૼઌૹઌ૽૽ૼ૽ૹ૽૽ૺૹઌઌ૱ઌૺ ૡૢ૽ૼઌૹ૽૽ૹ૽૽ૣ૽ૼઌૡૺઌઌ૽૽ૼઌૹ૽૽ૼૡઌ૱ૢૺ	५७७	\$.0p	.এঙ
3	શ્રુંન:૨ંશ:શ્રુંન(ત્રેય: ખર:ક્રુંશ:ત્રર્શેણ:અમ સુંન:૨ંશ:શ્રુંન(ત્યુંભ:૬ન્ડિલેખ:ફે:૨ંગ્રે:ક્રુંન્ડ)	५९१	<b>୯</b> .୨୬	.ס עפ

3	ર્ક્સિન રેંગ્ર મેંદ્રવયેલ ર્દ્દર હોલ છે. દેવી કુદ્દર હો.	<b>५</b> ९१	e.93	.ન્થ
٩	ૹૢૼૼૼૼૼ૽૽ૼ૽૽ૼ૱ઌ૽૽ૢૼૼૼૼૼૼૼૼૼૼૼૼૼૼૼૼૼૼૼૼૼૼૼ	५७३	હ.૧૫	.43
ч	ૹૣૼૼૼૼઌ૽૱ઌૡ૽૽૱૽૽ૡઽૹૣૼઌૹઌઌ૽૽૱૱૱ૺ ૹૣૼઌ૽૽૱ઌૡ૽૽૱૽૽ૡઽૹૣૼઌૹઌઌ૽૽૱૱૱ૢ૽ૺૹૢૢ૾ૢૢૢૼૢઌૢ	५७३	લ.નગ	.pe
(J	ક્ર્યુંન-રસર્યોન્પ્રયેભ-રન્પ્રહ્યેન-પ્રસ્ ફ્રિન-રસર્યોન્પ્રયેભ-રન્પ્રહ્યેન-પ્રસ્	43p	ฐ.คข	0.00
ป	क्षेचा.क्ष्यां ट्योश. ह्र्टायपु.लु.ची.क्. ह्र्टा.क्षे.ट्यान.प्यट.	469	<b>વ</b> .૫ <i>૦</i>	2.03
4	क्ष्याया ह्यायाः क्ष्रियः क्ष्रियः क्ष्रियः क्ष्रियः व्याययन् वर्षेः	५७१	<b>3.9</b> 4	.હત્ર
p	ૄ૽ૼૼૼઽ <sup>ૢ</sup> ૡૢઌ૽૽ૢ૽ૼ૱ૢ૽ૢ૽ૢૼૺૼૼ૱ૡ૱ૺઌ૾ૢ૽ૺ૾ૺૡ૱ ઌ૿૽ૹઽઌૢ૽૽ૹૢ૾ૢ૽ઌ૽ૢ૽ૢ૽ૺૼ૱ૡઌઽૢ૽૽૽ૢૺૺ૾ૺૡ૾ૼૢૺ	५७३	৫.০৶	2.23
10	ૹૣૼૼઌ <sup>ૢ</sup> ૾ૺ૾ઌૻ૱ૹૢઌ૽૱ૹઌૢ ઌૹઌ૽ૢ૽૱૾ૺ૽૽ૺૹ૽ૺ૾ૺ૾ૢૼઌૹ૽ૢૼૡઌ૽૽ૺ૾ૡૢઌૺઌ૽ૺઌૺૹ ઌ૾ૹઌ૽૽૾ૺ૾ઌઌ૽૽ૹ૽ૹઌ૽૽ૹ૽ૹઌ૽ૹઌ૽ૹઌ૽ૹઌઌ	<b>५</b> ९१	હ.હપ	.pJ pJ
11	ৼ৻ঀৣ৾৾ॱॾॣॕৼ৻য়৻ৣঀয়৻ৣড়ঀ ঀৼয়৾৻ৣয়	<b>4e</b> 3	<b>વ</b> .હહ	.مم
13	ક્ર્-ાયવુ.લવસુ.સૈવો.તમ-થૈય.વર્શુસ.થથો ક્ર્-ાયવુ.સુંચ.નુંચ.થૈ. ક્રિય.૧૨ને.ત્વને.યુ.વનું.યુજા.	<b>५</b> ९१	<b>3.</b> pp	. <b>५</b> p
13	ૹ૾ૢ૽ૢ૽ૢ૽૽૽ૼ૽ૹૺ૱ઌ૽ૣૼ૱૱ૺૺ૱૱૱૱ ઌૺૺ૱૱ઌૺ૱ૢઌૢ૽ૺ૱૱ઌૺ૱ ઌૼઌઌ૽૽૽૽ૢ૽ઌૺ૱ઌૢઌૺ૱૱૱ૢ૽ૺૹ૱ઌ૽૽ૺૺ૱૱ ઌૼઌઌ૽૽ઌ૽૽ઌ૽૽ઌ૽૽ઌ૽૽ઌ૽૽ઌ૽૽ઌ૽૽ઌ૽૽ઌ૽૽ઌ૽૽ઌ૽૽ઌ	<b>५</b> ७३	<b>८.</b> ०३	1.00
	Valid N (listwise)	496		

#### ग र्से से द्रे च दरद्रेथ क्रेंच स्मार्स् में प्रमार्थ प्रमा

	M	Mean			
	ৰ্থ (n=391)	์ (n=446)	F-value	р	η²
Ĵ₹ <sup>≈</sup> _01	<b>૯.</b> 02	≃.੭੫	<b>૯.</b> ૯∢	0.00*	0.02
र् <u>र</u> ीक्व्य_०२	<b>೬.</b> ೨೬	c.)@	2.4	0.24	0.02
ja=_03	<b>८.</b> 03	c.3	<b>3.</b> 2૯	o.oa*	0.02
jan_0~	<b>૯</b> .੭੫	<b>૯.</b> ३૯	<b>6.</b> 34	0.00*	0.03
3 3 au_04	<b>3.</b> < <b>୯</b>	<b>3.</b> ፈ၉	<b>ગ.</b> ૯૫	0.23	0.02

33ª_0G	<b>ર</b> .હ્વ	c.0)	2.23	0.3은	o
] 3 a _ 0 a	<b>3.</b> 42	<b>જ.</b> 42	0.4	0.4	0
Ĵ₹ <sup>2</sup> _0<	જ.૧૯	<b>ব.</b> ব	٦.0५	0.22	0.02
\$}\$ <sup>≈</sup> _0@	<b>3.</b> ၉ወ	<b>८.</b> ?૯	<b>વ.</b> 4હ	0.04	0.02
ja=_20	८.३८	८.५३	<b>ଓ.</b> 02	0.00*	0.03
ja~_22	<b>3.</b> ૯	<b>3.</b> ወን	2.02	0.26	0.02
Jan 22	<b>ર્</b> .૯૨	<b>డ.</b> 0డ	ე.≃ঽ	0.23	0.02
	ત્ર.હ્⊂	<b>డ.</b> ,20	<b>٩.</b> ٩<	0,04	0.02

<sup>\*</sup>p value < 0.05 is significant

### ष र्श्वेच रेश ५८ द्वेष प्रति र्श्वेच स्वार्क् वी प्रश्रापकर।

ર્શ્વન ક્રમાં મૃત્યવેતા ત્રવ્યા કે શ્રું વાસુવા સું વો સું ત્રાં સું ત્રાં હું ત્રાં ત્રા

ચીતાયર્સમાં તેનું છે. તેને સ્વર્ધો પ્રાથમિત પ્રસ્તિ ક્રિયા ક્

घेना'ख्य'-'म। र्श्वेन'नेय'-'न्पचेल'नदे'द्दे'नदे'क्य'ग्रन्थ'ने'ने'नवेत'ग्रु'मृत्य'र्घे'(Mean)'न्न्'खुन्'

শস্যাবশার্ক্স

		Me	ean	11	Di	fference	
	IV (n=210)	VI(n=206)	VIII(n=217)	X(n=210)	F-value	р	η²
ja=_01	<b>3.</b> ረወ	<b>ڪ.</b> 0۷	c.3	c.3	<i>ଏ</i> .ଓଓ	0.00*	0.0೭
Ĵåª_02	c.01	<b>డ</b> .0૯	<b>૯.</b> ঽ	c.3P	<b>6.</b> 24	0.00*	0.03
jan_03	ح.٦۴	<b>૯.</b> २२	<b>୯.</b> 0₪	c.0)	૧.હ્ય	2	0.02
Ĵ̂ŧª_0℃	<b>૯.</b> २२	<b>૯.</b> ૧૯	୯.३៧	c.14	ঽ.ৣঽ	0.02*	0.26
्रीकृष्य_०५	<b>3.</b> ረ၉	<b>3.</b> ⊿4	<b>ર</b> .૯ <b>ર</b>	વ.૯વ	2.CP	0.3	0.02
Ĵå <sup>≈</sup> _06	<b>3.</b> ለሮ	<b>3.</b> ၉૯	<b>ల</b> .06	c.04	<b>Ϡ.</b> ዛሬ	0.02*	0.22
Ĵ\$ª_0N	<b>ৰ</b> .৬৬	<b>જ.</b> 42	<b>વ</b> .પ	<b>Ϡ.</b> ዛቦ	2.00	০.३৫	0.02
Ĵå <sup>≈</sup> _0<	<b>ર.</b> .રહ	<b>ব.</b> ব	<b>3</b> .2	<i>3.1</i> 2	<b>ব.</b> ঽঽ	0.06	0.02
Ĵå <sup>≈</sup> _0€	e.2	c.1e	<b>≃.</b> ?₪	<b>3.</b> ៧ን	<i>ለ</i> .፯५	0.00*	0.03
Ĵ\$ <sup>24</sup> _20	૯.રૂ	૯. <b>ર</b> િ	<b>૯.</b> ৫२	<b>૯.</b> ३५	<b>3.</b> ៧	0.02*	0.03
13ª _22	<b>3</b> .৫	<b>ર.</b> હ⊂	<b>Ϡ.</b> <હ	<b>3.</b> 43	<b>3.</b> 0℃	0.02*	0.03
Ĵåª_22	જ્ર.૯૫	C.0N	c.12	<b>3.</b> ረ	<b>૯.</b> ঽ)	0.00*	0.2
Ĵåª_23	<b>Ϡ.</b> ५ <b>&lt;</b>	c.94	<b>૯.</b> ३৫	3. <i>6)</i>	<b>ク</b> ⊂.๗ス	0.00 <del>*</del>	0.0か

<sup>\*</sup>p<0.05 is significant

## ग र्र्भेयःमृतेःसःमृद्रसः नद्रस्येषः चतःर्र्भेवः स्मार्कः मी प्रस्राप्तरूप

र्झे (mean) विमायस्य १ पार्य प्रमापि १ से प्रवासि स्थाप्त स्थाप्त स्थाप्त स्थाप्त स्थाप्त स्थाप्त स्थाप्त स्थापत स्यापत स्थापत स्यापत स्थापत स्थापत

विग'ख्य', 'य| र्श्सेय'म्बेर'यात्रय', प्रत्वेत्य', प्रेर्चेत्य', प्रेर्चे, प्रत्वेत्र', प्रेर्चे, (mean) प्रत्युत्र'यर मी मुद्दय्य

		Mean		Difference	•	
	Urban (n=466)	Re- mote(n=334)	Semi-ur- ban(n=38)	F-value	р	η²
Ĵå <sup>≈</sup> _02	c.99	۵.99	<b>3.</b> ৫3	<b>૯.</b> २३	0.00*	0.03
र् <u>र</u> ोक्ष्म_०२	c.)N	<b>૯</b> .2	<b>Ϡ.</b> ሩወ	<b>2.</b> <ొ	0.22	0.02
र् <u>र</u> ीक्ष्य_०३	c.12	<b>८.</b> १८	ત્ર.૯૫	0.44	0.೭ೀ	0
Ĵ\$ <sup>≈</sup> _0℃	<b>૯.</b> २३	c.3<	c.14	<b>ব.</b> ৰ	0.06	0.02
ઽૢ૽ૺૺૺૺૣૢૼૺ <sup>૱</sup> _૦૫	વ.઼િ૯	<b>3.</b> < <b>२</b>	<b>ર</b> .५ <i>१</i>	3.69	0.0⊂*	0.02
Ĵ₹ <sup>#</sup> _0G	ત્ર.હહ	<b>૩.</b> ૯ <b>&lt;</b>	<b>ર</b> .૯ <i>)</i>	<b>3.</b> 34	0.06	0.02
วิสุม_0พ	<b>Ϡ.</b> ५<	<b>ఇ.</b> ८५	<b>વ.</b> .૯૫	<b>૯.</b> 03	o.oo <del>*</del>	0.03
Ĵå <sup>≈</sup> _0<	3.22	3. <b>4</b> e	<b>3.</b> 0<	<b>3.</b> 3	0.02 <del>*</del>	0.03
Ĵ}₹ <sup>21</sup> _0@	c.11	ત્ર.ૄિલ	<b>ల.</b> ૯ <b>૧</b>	2.ወ3	0.20	0.02
Ĵãª_20	<b>డ</b> .డ <i>1</i>	c.4 <i>9</i>	<b>८.</b> ८२	2.03	٥.٥	0.02

Ĵ₹ <sup>21</sup> _22	<b>ત્ર.</b> હ⊂	<b>3.</b> 心	<b>Ϡ.</b> ૯<	<b>વ.</b> ૯૯	0.04	0.02
jan_22	3.e)	<b>૯.</b> /3	<b>3.</b> かと	<b>૯</b> .३	0.00 <del>*</del>	0.03
Jan_23	ત્ર.હ્ય	<b>డ.</b> ?డ	<b>~</b> .04	2.eg	0.2	0.02

<sup>\*</sup>p<0.05 is significant

## ८ त्युटर्स्चेग्रयः ५८ त्यञ्चेवा प्वतः र्सूनः स्वा त्रुं वी प्ययमः त्रकरः।

દ્વાના સંત્રાને ત્રામાં મું વાત્ર માર્ક (mean) દ્વાના સ્ત્રાના સ્ત્રાના સ્ત્રાના સંત્ર માર્ચ માર્ચ સંત્ર માર્ચ માર્ચ સંત્ર મ

भ्रेन'ष्वस'१०'म। त्युटर्स्चेन्स'५८'म्बेल'ई'न्य'सेसेन्नेक्'रु:ग्री'न्युस्समें'(mean)५८'खुर्यसमी'न्युस्सम्

	Mean				D	ifference	
	East- ern(n=105)	South- ern(n=426)	West- ern(n=279)	North- ern(n=30)	F-value	р	$\eta^{2}$
र्रेड्स 02	C.2N	c.99	≃.०५	<b>3.</b> e	ว.๗๗	0.23	0.02
र् <u>देश</u> _०२	<b>ల</b> .లఁ	<b>૯.</b> /ఆ	c.22	વ.૯વ	උ.එඋ	0.00*	0.03
jan_03	<b>૯.</b> २५	c.14	ح	ح	<b>3.44</b>	*ء.٥	0.02
Ĵãª_0≃	૯.૯૫	<b>૯.</b> ૧૯	<b>૯.</b> २३	ح	ત્ર.૯૯	0.02*	0.02

्रीद्व <sup>स</sup> _०५	<b>3.</b> @3	<b>3</b> .e	<b>ব.</b> <ব	<b>3.</b> 4 <i>心</i>	2.43	0.22	0.02
ઽૢૺૺૺૺૢૼ <sup>ૠ</sup> _૦૯	c.24	<b>ব.</b> ৫ <b>ব</b>	<b>Ϡ.</b> ၉ረ	<b>3.</b> ሬ၉	٧.2٢	0.0៧	0.02
Ĵãª_0N	<b>3</b> .૯	<b>Ϡ.</b> ५ <b>८</b>	ત્ર.૯૯	<b>વ.</b> <ঽ	C.<	0.00*	0.02
Ĵ\$ <sup>≈</sup> _0<	<b>3.</b> 2૯	<b>3.</b> 2૯	<b>Ϡ.</b> Չ<	<b>વ.</b> 44	<b>૯.</b> ३२	0.00*	0.02
J3ª_0@	e.22	ح	<i>ڪ.</i> ,2ڪ	<b>3.</b> ረ	૧.૯૧	0.22	0.02
Ĵ\$ <sup>≈</sup> _20	<b>૯</b> .4	೭.೭೬	<b>೬</b> .೬೬	<b>3.</b> ረ	G.22	0.00*	0.03
ja_22	<b>Ϡ.</b> ៧५	<b>ર</b> .4૯	<b>3.</b> 心く	<b>3.</b> ৫३	<b>3.</b> ፊ<	o.o३*	0.02
ja=_22	<b>ڪ.</b> 16	<b>డ</b> .0 <i>៧</i>	<b>Ϡ.</b> <2	<b>3.</b> ረ	<b>૫.</b> ૦૯	o.oo*	0.02
Ĵãª_23	<b>డ.</b> ?౬	<b>ల</b> .0ల	ح	3.៧៧	2.34	0.ಇಆ	0.02

<sup>\*</sup>p<0.05 is significant

# ૯.૧.૧ ર્સુન સુંન નો દેશ ભાષા છે. ત્રાથમાં સંસ્થા કરો

शरकुर्स्त्रातील्ट्नां झें त्यूर्यना झें त्यूर्यना श्रीया दें त्यूर्यना योश्वा त्यात्वा स्वात्त्र त्यूर्य व्याया स्वाया स्वया स्वया स्वाया स्वया स्वय

म् अन्याः अस्याः स्ट्रिंतः प्रत्ये ह्रिंत्याः त्रच्चे स्थान्य स्थाः त्रच्चे त्रस्य स्थाः स्थाः

# ८.४.४ र्ह्येन'सुग'गे'नहग'लेन'द्दे'नते'ह्येर'नहर'नश्रअ'तकर'द्रेडे'द्रध्र

मृत्यालकः नम्नुःश्चेताःत्वन्त्री। अत्वानाश्चरान्त्रीःश्चेताःत्वन्त्रीःश्चेत्वाःत्वन्त्राः श्चेत्रःचित्रः श्चेतःचित्रः व्यान्त्रः विद्यान्त्रः विद्यान्तः विद्यानः विद्यान्तः विद्यानः विद्या

तकरः र्श्चेन'सुना'नरुत'सरमार्नेनास'से अरम्मास'(S23) निस'नर्गोन्'तुना र्हेरान'सुना'तेते'तुस' र्हेन'सरस'चेत'नेनेस'ततुन (S:18,23,26,32,33,34,36,37,39, 87,88,97,188,265,287)।

चर्ष्यस्याः देवः अग्वित्वर्ध्यन्यत्युर्द्धः व्याप्तिः व्यापतिः विष्तिः व्यापतिः विष्तिः विषतिः विष्तिः विषतिः विष्तिः विषतिः विषतिः

ર્સૂય પ્રત્યું તે જોત પ્રત્ય (S61)| સ્ત્રાપ્ય પ્રત્યો સુંગ્યું તે જોત પ્રત્ય (S61)|

#### ८.५ पठुर्गमूर्या

तस् तद्ये द्वी कुं जुर् क्ष विक्त चर्ले स्वर्यं स्वरं स्वर्यं स्वरं स्वरं स्वरं स्वरं स्वर्यं स्वरं स्व

#### র্থ্যমন্ত্র্বা Discussion

#### 4.2 至野打

## ५.१ र्शेश प्रमृद्द दर्शेश यसुवा

# ५.५.७ क्षेत्र-पहरर्स्स्य स्वा नी प्रथम एकर पशुर पशुरा

૮ઌ.ભૂર્નન.લવર્-તન્નન.લક્ષ્મ.તક્ષ્મ.ત્વમ્.ત્વ્ર્યુર્ન.લા કે.તવર્નસ.ખન્ન.કૃત.લે.લે.ફ્ર્રેટ્ય.લક્ષ્મ.કૃત.વક્ષેય.લે.વર્મેય. કુત્તા.લક્ષ.ન.લ્યું.નાનન.કૃત. નાનળ.ક્ષેય.લવર્નસ.ભુષ.તવુ.લપ. કૃત.કૃ્યે.લ્ય.લું.વર. મૂંટ.લનુળ.ળુનાન.સૃષ. કુત્તા.ક્ષેતા.લે.નુંનાન.લન્ય.તું.સ.લ્ય.લું.સ.ભુષ.લે.વર્ને.લે. લક્ષે.કૃતા.કળ.લટ્ટ્યેલ.સ્ય.સ્ય.ત્વર્ને.લક્ષ્મ.કૃત.લે.યો.સ. કૃત્ય.સ્યા.લે.નુંનાનન.સ્ય.તક્ષ્મ.તવર્ન.ત્વર્મુસ.ભુષ.તવર્ને.સ.લક્ષ્મ.ત્વર્મા.સ્ય.લક્ષ્મ.સ્ય.તવર્ને.લક્ષ્મ.કૃત.લે.

## ५.४.४ र्र्श्वनःस्वार्क्रःमेःह्टायदेःदवःस्वार्धार्यः

क्ष्मी चोश्वान्तर्धियः खुष्ठ्यालयः श्रुं, याः याः पृष्ठाः भ्रुं याः पृष्ठाः चुर्याः चुष्ठेषः खुष्ठाः प्रश्नाः चुर्याः चुर्य

### ५.५.३ र्स् र्सर्तिन्द्रे नातु नहेम् र्हेनावदे त्र्रे पूनातु त्र्यु मान

स्. श्रु. खे. जी. सी. सी. क्षेत्र क्ष

### ५.५.७ र्र्सुन मृते साम्रह्म १५८ त्रे वा मृत्य वा स्टाप्त वा स्टाप्

યો. દું. યા. તે ક્રાયા ક્રિયા ક્રિયા

### ५.५.५ सुरर्खेग्रथःग्री'खुर्यसर्द्रात्रवेशःहॅरावदेववी सूग्रास्

ख्रुष्टम्बा जीट्सुंग्रेश्चित्रः क्षेत्रः कष्टिः क्षेत्रः कष्टिः क्षेत्रः कष्टिः कष्टिः

## ५.५.७ सम्भानी मुनार्से राम्येश हें रायते तम्री स्थान

ફ્રેન્ડા, ક્રેશ્વ, સેવાન ક્રેવ, સુન ક્રિવાન ક્રિન ક્રેન્ડાન કરતા સુન કરતા સેવાન કરતા સામાન કરતા સુન કરતા સુન

### 

વર્શિયાના માર્ગિયાના મુસ્તિયાના સ્વિત્ ક્રિયાના સર્વા સ્વિત્ ક્રિયાના માર્ચિયાના સર્ધિયાના માર્ચિયાના સ્વિત્ કર્યા પ્રાથમ સ્વિત્ કર્યા માર્ચિયાના સ્વિત્ કર્યા સ્વિત્ કર્યા માર્ચિયાના સ્વિત્ કર્યા સ્વિત્ સ્વત્ સ્વત્ સ્વિત્ સ્વિત્ સ્વત્ સ્વત્

# ५.५.५ र्ह्येन:स्वार्स्,लार्स्ट्रायदे:स्वेन:स्वेरःग्वी:न्यादःरवःर्वेरःय

र्सेच स्वीता स्वीता त्यव्यः र्सेच स्वीता स्वीता त्यव्यः

# ५.५.७ हॅरामते समाबुरसूबार्कन्न्रस्था

र्ला कुं. तर्मा चुरा त्रम् रेट्सी रायहर्म विका कुं लेट कर का का अने सार्य हैं साम के स्वाप्त कर हैं स्वाप्त कर हैं स्वाप्त कर हैं साम के स्वाप्त कर हैं स्वाप्त कर हैं साम के स्वाप्त कर हैं साम के स्वाप्त के स

देयन्द्रवेपाने से मिल्टमी सुकाळ दे ग्री काळ के स्वाप्त के स्वाप्त

## u.द विच'पर्केष'५८'पञ्चेष'मदे र्र्जुब्

द्रा खर्यायम् क्रिक्त्याविष्ठ्रात्र्यायः वर्षेत्रक्षेत्रम् वर्ष्याक्षाः वित्यत्र्येत्रक्षाः वर्ष्यायम् वर्षेत्रक्षाः वर्षेत्रक्षः वरत्रक्षः वर्षेत्रक्

यचकायद्वे, मुन्नः ह्वी, जी. विचाया क्षीया नायु क्षीया ज्ञाप्ता मिन्न क्षीया चित्रा क्षीया ज्ञाप्ता चित्रा विचाया क्षीया चित्रा विचाया क्षीया चित्रा चित्रा विचाया चित्रा चित्रा चित्रा विचाया चित्रा चित्रा चित्रा विचाया चित्रा चित्रा चित्रा विचाया चित्रा चित्रा

# ५.८ अर्देर्शिवायर्केयाचीर्देवायुग्यसःर्ह्मेत्

त्यन् अः कुं मुश्र-माष्ट्र द्वं तर् , कुं ती माष्ट्र , यव्य , कुं , यवन् , सूर , यव्य , सूर्य , यव्य , यव्

#### ৸৸ বপ্তব্যবস্থা

र्टायम्वारान्यः भ्रीयः रेट्याय्ट्यावृत्ताय्व्यायः म्याय्यायः स्वायः वित्तायः स्वायः वित्यायः स्वायः वित्यायः स्वायः वित्यायः वित्ययः वित्यय

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- รุ่นณาสฐิรารุการิสาธิสาสเกตาสฐิ (๑๐๑๔) ชารัก ฮัการการ เพื่อการ เพิ่น เพื่อการ เพิ่น เ
- รุग्य प्रचर् प्रविश्वे वेदे श्वर प्रचर्त्रे। Journal of Educational Action Research (JEAR), CERD Vol.1(1), 45-59.
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- चब्रम्भः महत्र्वस्य स्थित्। (२०७७) त्युम् क्वृत्यः त्रस्य मश्च्यः स्थाः स्य

रेब केब समय पर्चे र् ५८ स्राय प्रवास हैं १

बैच'वर्केंब'ग्री'चडुर'र्नेब् (Abstract)

अष्ट्र्यन्त्यं, चिंदित्वंतायः श्रेन्यन्यः क्ष्यं वाद्म्यायः चींतावनः स्ट्रियं चीं चींतावनः स्ट्रियं वाद्म्यं व

स्रीट्रामा, स्रुट्ट, श्रेमा, यहं, त्रिम, स्रुप्ट्राम, स्रुप्ट्राम, स्रुप्ट्राम, स्रुप्ट्राम, स्रुप्ट्राम, स्रुप्ट्रम, स्रुप्ट

१. विचःर्रेग्रसायेग्रसायम्पा सुर्रिः विसारेग्रसर्दे रसार्स्स्याम्

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४. धेग्रबायम्पा शुःर्रःभ्रेबार्स्याः स्रास्त्रिवाया

नार्डें केना (Key words) र्श्वाचा व्यवस्थिता भूग्नार्थेना केंब्राकंब्राबरकाचर्ड्याबान्त्रीया क्रुचःर्स्भूदा र्द्ब्याचेत्रा न्द्रा वर्तेना चर्डेग्नगुदा

বৃশাব্দের শ্রী অপুর্বা (Problem Statement)

ભૂદ્યા.  $\hat{a}$ ી. તાર્યત્ર વિવાસ તર્મ ટ્રેયે. શુર્યા તાર્યત્ર તે તાર્યત્ર તાર્ય તાર્યત્ર તાર્ય તાર્યત્ર તાર્ય તા

ट्रेन्ट्र हुला लूर्न साम्यान्य साम्यान्त सम्यान्त सम्यान सम्यान्त सम्यान सम्यान्त सम्यान सम्यान्त सम्यान सम्यान्त सम्यान्त सम्यान सम्यान्त सम्यान्त सम्यान्त सम्यान्त्र सम्यान सम्यान्त सम्यान्त सम्यान्त सम्यान्त सम्यान्त सम्यान्त सम्यान्त सम्यान्त सम्यान सम्यान्त सम्यान सम्यान सम्यान्त सम्यान्य सम्यान्त सम्यान्त सम्यान्त सम्यान्त सम्यान्त सम्यान्त सम्यान्य सम्यान्त सम्यान्य सम्यान्त सम्यान्य सम्य

ट्रे.यचर्सर् अस्.रुअ.सूंच.स्वा.स्वा.स्वा.स्वा.स्वा.संच.स्व.स्य.संच.स्व.संच.यमुट्रा.स्व.संच.संच.संच. श्चे स्ट क्रुन्द स्ट त्यु मा कुर स्ट्रिमा का मादका र्सु वा रस्तु वा र स्ट्रिमा स्ट स्ट स्ट स्ट स्ट स्ट स्ट स्ट मादि मा स्ट स इंन.जय.बी.ब्र्.चनर्नेर.ष्ट्. पर्या.पड्य.तयर.न्नर.न्नर.न्नहजस.लुय.तन्न। पर्वेच.बीजा.पहूय.वर्य्य.जया. र्श्वेन में मीयः (२०१८) शुःन इसया हे पॅर्नियतः हैं राय नह र्ने दार्श्वेन प्येतः र्श्वेन प्रेन में त्राया रेन नर दिवेथान हैतः हैं नाम दिने देवा मुला विना ही। मृत्र दिवेथा स्निन्धिमा हैमा दिन स्थापका दिव्या ही मा र नैश हॅटाव तर्दे वेश दर्वेषः वाय के बेर चर्ने द देवत् कुय र्षेट्र श कुय हिला स्निर्पे द पर्वे स्व त्यनः स्टन्दन्दनी देव श्रुट्यु प्यतः यः श्र्रें अप्येन्यः अर्दनः वालवः यतः क्रें अन्दायहेवा हेवः श्रीः याः के ऱ.प्यन् दुरप्यह्रअ:र्हेर:र्हे प्यन् र्ह्युग्रथ:यदेः वि:यह:यो:व:क्वा:येंद्रचा:यन्द्र-पर्गेद्र-सुग् (ह्ये:यं:४०१८ ह्यें ह्वा ्त प्रा अवश्चान्यन्त्रेराचे हुया (१००५) चीश्वाय हुअश्वारी मेन्द्रेयः सून्येव प्रविन्येत्रे ऱेश<sup>,</sup>क्वी:वेश:देवा:वी:इ:वाल्दादार क्षेर:भ्रद्की:क्रेश:क्ष्य:यन्य:श्वे: पर्श्ववश:हे:र्थेद:श्वे:श्व:पहेद: हॅट: त्यु'यहेतः क्षेत्रअ'अअ'चेरःश्रुत्वालु'तयन्'नेतन्त्वा (र्वेवा'श्रम्अ' ११६८-११६०) वि'वीक्ष'यर्गेन्'से'श्रुद्धालु' देवरः ध्वेरप्तरः र्श्वेपःबुप्तवाःवीःर्श्वेपःध्वाःर्दुःयशःत्रश्रशःयदःवश्वःश्वेः सूदःतुःतवद्धःसःवार्हेनासः अर्वे देश र्सुन स्वार्क् नीयः नावर सूर्त् हुं पदी वरः हुं र दे से वर्त्त न रे प्रवर्धाययः आवयः र परः સેન્ગો ફ્રુસા ફ્રુપા શુૈસ અર્દન્સેઃ લેવ વર્ઢેવા વર્લે અશુન્ને નિરેશન્વર્સ શ્રીઃ અર્ધેન્સે સાંશીઃ ગાઠસા ઠન્ षरःगवि नवगः होः विनः तर्के वा तर्ने वन दे रे विनः विना

क्रि.श्रम् क्रुंच्यंक्र्स् क्रि.श्रम् ह्रेचायः विराम् विराम विराम

### द्वे'प्र'ग्रिंग् (Research Question)

### অর'অন্য'নী'ই'বা (Sub-Question)

- ग) हॅरावासुर्धेपा र्सेर्सेराची र्स्नेरा
- म्ह्रायते त्यमा त्येत प्रमः विश्व प्रमेश के अश्व क्षेत्र मी क्षेत्र ।
- म् मा इत्याप्त स्वापाल स्वापाल
- ८) इ.माल्ट्रर्र्यस्यान्यसः र्स्त्रीया
- ठ) हॅटावासुर्ज्ञेचा पर्सेन्प्रविषयमाणीयसार्भेत्।
- क) हॅ्रावाप्यरामुकाग्री र्देवासुः व्यवकार्यकागावत्।

# र्देश'चेश'पश्चर'विप्।(Literature Review)

ड्रम्।ययन्रसःजन्नः ह्र्यावद्रम् वाजन्नः न्याद्रम् वाजन्नः न्याद्रम् वाजन्यन्य स्थान्यन्तः विश्वान्तः विश्वान्य विश्वान्तः विश्वानः विश्वान्तः विश्वान्तः विश्वान्तः विश्वान्तः विश्वान्तः विश्वानः विश्वान

सुंदाकेदायम् स्ट्रिंग्यायन्त्रम् संप्तत्त्वाचेराम्बुत्यायम् (२०११) म्यायायम् स्ट्रिंग्यायम् स्ट्रिंग्यम् स्ट्रिंग्यायम् स्ट्रिंग्यायम् स्ट्रिंग्यम् स्ट्रिंग्यम्यम् स्ट्रिंग्यम् स्ट्रिंग्यम् स्ट्रिंग्यम् स्ट्रिंग्यम् स्ट्रिंग्यम् स्ट्रिंग्यम् स्ट्रिंग्यम् स्ट्रिंग्यम् स्ट्रिंग्यम् स्ट्रिंग्यम्यस्यम्यस्यम् स्ट्रिंग्यम् स्ट्रिंग्यम् स्ट्रिंग्यम्यस्यस्यस्

ભૂન્યત્રનું નિરાત તુના ત્રિયા ક્ષેત્ર ભૂના ત્રાપ્તા ત્રિયા ત્રિયા ત્રીયા ત્

यमुण्य-प्रम्यान्त्राम् स्टाय-क्री-भ्री-विश्व-दिस्य-प्रायम् (स्री-क्रा-विश्व-द्रम्य-प्

According to Ex-Dzongkha Development Commission's (DDC) secretary Dasho Sherab Gyeltshen, in his one of the question answer session with kuensel reporter states Dzongkha is not difficult, it never was. It's a new phenomenon among people where many are finding the language difficult because there is lack of place and resources to study it. Moreover, English has taken such a strong hold among us. A Japanese tutor is teaching *choekey* to 15 students at present. If a person like him can read and write in *choekey*, as a Bhutanese it shouldn't be difficult at all. For a linguist, Dzongkha is one of the easiest of all languages and English the most difficult (January 8, 2015)

**Dasho Sherab Gyeltshen** (2015) also reiterate his voice saying Dzongkha newspapers have few readers compared to English, as there are less people who know the language. Dzongkha was never given the priority it deserves. Even today in schools, Dzongkha subject receives less importance. Of the thousands of graduates every year, only a handful can read and write Dzongkha well. For newspapers to promote Dzongkha, we have to produce readers first by changing policies that would not only encourage but also serve as a platform to learn Dzongkha. (January 8, 2015)

One of the media surveys in (2011) had found that younger generations in Bhutan prefer to go English against Dzongkha. And this is fact since English has been the medium of instruction in schools since modern education system was introduced in the country. English has been serving its good not only for intercommunity communications but also as proclaimed national language. Many media reports say, Dzongkha speakers have now turned to Dzonglish speakers – a connotation copied from India where people call Hinglish for a mixture of Hindi and English. In Nepal, it is Nepangreji. Dzonglish is bud that will ultimately grow into English flower. The trend shows, Bhutan's new generation is moving to English than Dzongkha. Dragging reverse is not possible. (July 29, 2011)

According to Bhutan News Service (2009) the students of Bhutan have stated that Dzongkha, their national language is boring, difficult and has less job opportunities. The responses came surprisingly from the students of Rinchen Higher Secondary school in November 2009 when they were interviewed by officials from Dzongkha Development Commission (DDC) on Friday. The Dzongkha graduates are expected to be jobless, and therefore the students seem less interested to learn the subject. Interestingly, the students were found to be studying Dzongkha because it is a main subject which is must for them to get

through to the next class. The students demanded the subject to be simplified and made interested.

ली. लुप्र. च्र.चर्म्/ट्रेप्ट्रेच (र्म्नाः च्रट्यः १४)

हिंदायः स्ट्रिप्तः प्रेच्यं स्वाप्तः स्वप्तः स्वप

शु.यट्,श्रम्श्रातम् ह्र्यायाल्यः भ्रैमायोथ्यद्वात्तः स्थात्त्राः स्थात्त्र्याः स्थात्त्राः स्थात्याः स्थाः स्थात्याः स्थात्यः स्थात्याः स्थात्याः स्थात्याः स्थात्याः स्थात्याः स्थात्याः स्यात्याः स्थात्याः स्थात्यः स्थात्याः स्थात्यः स्थायः स्थात्यः स्थाः स्थात्यः स्थात्यः स्थाः स्थातः स्थात्यः स्थात्यः स्थात्यः स्थात्यः स्थात्यः स्थात्यः स्य

लक्ष.वस्तीं, विषयः हुँस्यपुरे वस्ः हूस्यजुस्यां, यज्ञेशः लिका वुष्टे के वात तरीयः ज्ञान्यप्रस्ते प्रियो विष्या कृषाः तर्ने वात्त्राच्यां स्वायः व्याप्ताः वात्त्राच्याः वात्त्राच्याः वात्त्राच्याः विष्यः व्याप्ताः वात्त्राच्याः वात्त्राच्याः व्याप्ताः विष्टाः व्याप्ताः विष्टाः व्याप्ताः विष्टाः व्याप्ताः विष्टाः व्याप्ताः विष्टाः विष्यः विष्टाः विष्टाः विष्टाः विष्टाः विष्टाः (५३५ तुः १० यदः ५३५ तेषः ५ छे ५ हेर् १८ ५८ स्थाप

यु.ट्ट. पद्म.मं.चुर्ट्यं (रेट्टीय (ट्टीयं चिट्टीयं चिट्टीयं क्षेत्रं ने क्षेत्रं क्

### ब्रेच पर्केषा श्री दश्यामा प्यूषा

ઌૺ. હુન.તશૂ્ળ.તટ્રે.તશ્ર્.તશ્રું.તઘ્ટ્ય.ક્વ સ્વા.યુ.જી.થયન્ય.કુવ. બેળ.ળય. મૈળ.ભૂત્ય.ઋંટ.જીવા.શ્યા.શ્રેં.તજૂ્ળ.કે. વોટ્ટ્-. જયય.તશ્રું.યુ.યુ. શ્રેષ.તા.સૂંચ.ભૂત્ન.તાય. ટ્રે.તલ્રે.યા.તદ્વ.પત્વટ. ટ્રે.યુ.. સ્વ.ત્યા.શ્રેય.ત્યું.પત્ય. કુંષ.તય્યા.કુંચ.તત્વટ.યુ.યુ.સુ. ઋંટ.તિ.શૂં.ત્વ.ત્ય.તુ. પત્ય.તુ. પત્ય.તુ. પત્ય. ટ્રે.યુ..યુ.. કેવ.ત્યા.શું.તુ.યુ.. ક્રે.તત્ય્યા. કેવ.ત્યા.યુ..યુ. ઋંટ.તિ.શૂં.ત્વ.ત્ય.તુ. પત્ય.તુ. પત્ય.તુ. પત્ય. કું.યુ..યું. કેવ.ત્યા.શું.તુ.યુ.. ક્રે.ત્ય.ત્યા.યુ..યુ..યુ..યુ. নি নের্ক্রি ব্যাহ্মন্থ নের্মার্থ ক্রমার্থ (Research Methodology and Tools)
নি নের্ক্রি নের্মান্থ নি নের্ক্রি না ঘনমান্থ না আনমান্থ না আনমান্

चनकानेकान्नेवाली (Mixed mode) व्यमायेकात्वनान् में प्राप्तः प्रकारम् विवादक्ष्या प्राप्तः विवादक्ष्या प्राप्तः विवादक्ष्या विवादक्ष्य विवादक्ष्या विवादक्ष्या विवादक्ष्या विवादक्ष्या विवादक्ष्या विवादक्ष्या विवादक्ष्य विवादक्ष्या विवादक्ष्य विवादक्षय विवादक्य विवादक्षय विवादक्षय विवादक्षय विवादक्षय विवादक्षय वि

gale, five points) શ્રાયત્ર સ્થેન ક્ષેત્ર ક

### รุये'र्कर्। Sampling (लैप'वर्केल'त्ररपरुव'सरमार्नेगस'से)

लूटलायर्स्ट्रेशका शु.चाटका ३७३० लका यक्षांजुबारवयटालूटितालुषी स्वा विक्.५०० टट. विक्रां५५० ट्रेजका क्रांक्राटिशे, विद्याद्वाह्में स्वाका क्रांक्राटका श्रीचा चीतायहूष पर्वेचाला श्रीचा क्रांक्राटका श्रीचा चित्राचा क्रांक्राटका श्रीचा चीतायहूष पर्वेचाला स्वाक्राटका विकास क्रांक्राटका विकास क्रांक्र विकास क्रां

### শ্ব্ৰ'মুহ'বৃত্তী'ব্ৰহ্মবৃ (Data Analysis Procedures)

खुन.क्र्.अम्रुण.कुष्य.ययरं.ययरं.टं. योषरं.ट्रंब.प्यत्म.क्रुस.लूरं.शु.क्र्.मूंश.यकरःश्रेषं.खे.यर्त्यंत.हे.लूर् शु.लट. क्र्यं.श्रीयं.का.यटसं.णयं.णृषं.यघतःक्रे. धेयशःचयोगःस्यां.लशःऱ्रःत्यंष्यं.क्रेयःक्रेयःच्रेयः ट्रं. चीतःयच्यःश्रेषःखं.क्र्यं.च्रंय्रं,च्रंत्यं। ट्रंश.क्र्यं. विद्यःचर्श्वेयःक्रे.च्रंत्रं,च्रंत्रं,चर्यायशःलथःच्रंप्रं, लशःलशः प्रचानःक्षेतःखं.क्षेत्रं,च्रंत्यं। प्रचानःक्षेतःच्रंत्यं। विद्यःक्षेत्रं,च्रंत्रं,च्रंत्रं,चर्यायःक्षेतःच्रंत्यत्यः लशःलशः प्रचानःक्षेत्रं,च्रंत्यं। च्रंत्यां,ज्रंत्याःच्रंत्याःच्रंत्याःच्रंत्याःच्रंत्यं। विद्यःक्षेतःच्रंत्यं। व्यत्यःवर्षेत्रःक्षेत्रं,च्रंत्यं। चर्यायाःच्रंत्याःच्रंत्याःच्रंत्याःच्रंत्यं। चर्यं। विद्यःच्रंत्यं। चर्यं।

## র্ন্নী'শ্রন্'ব্রাজন্প (Reliability and Validity)

अम्.दुशःश्रृंचःबंधः वुवायक्कात्रा्र्वावितः क्वीत्विवः क्वीत्विवः क्वात्वितः व्यात्विवः व्यात्विवः व्यात्विवः व व्यातक्क्वात्व्यात्वः व्यावक्कात्वात्व्यात्व्यात्वे वित्ववितः वित्वत्वः व्यात्विवः व्यात्वे व्यात्वे व्यात्वे गिर्धरायुणानम् ग्रीष्टम्ली

ता. भीष्यान्वस्त्रीप्तं ग्रीपान्यस्य भाष्टम्याप्ताः वार्ष्ट्यस्य भीष्टम्यस्य भीष्टम्यस्य भीष्टम्य भीष्टम्यस्य भीष्यस्य भीष्टम्यस्य भीष्टम्यस्य भीष्टम्यस्य भीष्टम्यस्य भीष्टम्यस्य भीष्यस्य भीष्टम्यस्य भिष्यस्य भीष्टम्यस्य भिष्यस्य भिष्यस्य भिष्यस्य भिष्यस्य भिष्यस्य भिष्यस्य भिष्यस्य भिष्यस्यस्य भिष्यस्यस्य भिष्यस्यस्य भीष्यस्यस्य भिष्यस्यस्य भिष्यस्यस्य भिष्यस्यस्य भिष्यस्यस्य भिष्य

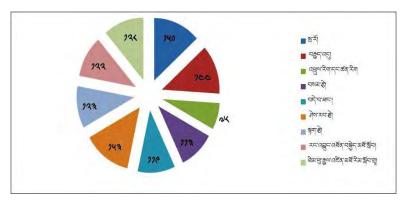
हैं, चर्ने, जुषे, यचरे, जी हैं, चर्ने, जुषे, यचरे, जी हूं प्रमुं, यं की, अहं, दुश, श्रृंच, बी, श्रृंच, स्वें वी, क्वें, जी, वी, ह्यं, क्वें, क्वें, क्वें, क्वें, विश्वा, विश

### নিব'নের্ক্টিম'শ্রী'শ্যুর'র্ম্ব্রি5'ক্টম'শানিশা (Research Ethics)

चित्र-क्रि-तर्मी त्यन्तर्ण्णी क्षित्र-प्र-स्याक्षेत्र-प्रमुख्य प्रमुख्य प्

# ন্বিব'বের্ক্রম'শ্রীয়াব'বের্মা (Research Finding)

चान्नजाक्की प्रस्तान्त्र स्वान्त्र स्वान्त्र



१.१ पर रेश ५८म। अर्थे रेश र्सेन मृत्रुं प्रश्ना चरुत सर मिर्ने मश्रीते मुस्यावते र्सेर ख्रा

ताला, जुर् त्यच्यः श्री ताला, जुर् त्यच्यः श्री ताला, जुर् त्यच्यः श्री ताला, जुर् त्यच्यः स्था, व्यच्यः स्था, व्यवः स्था, व्यच्यः स्था, व्यवः स्था, व्यच्यः स्था, व्यवः स्था, व्यच्यः स्था, व्यच्यः स्था, व्यच्यः स्था, व्यच्यः स्था, व्यवः स्था, व्यच्यः स्था, व्यच्यः स्था, व्यचः स्था, व्यचः स्था, व्यवः स्

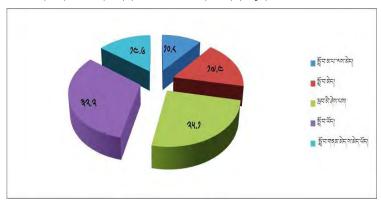
७.२ चर्ड्-घेषा'र्ऽस्य'। त्यःश्लर्ञःयःदइक्षःश्रॅःशे'चःचरुतःसरःगर्हेग्रसःसेदेःघी।

四.對打	गुरुराय	নশ্রী.ছ
<u>र्</u> ह्रटाय/र्ज्ञ.जूट.	340	
<i>ব</i> ম:শ্রুমাথনা	હહ્ય	26.p
ক্ল্র্'অর্ক্সশা	266	<b>€</b> 9.₹
र्चुक्ष.घटन	હ્ય	13.0
শ্বৰ	200	€.0
নৰ্থুমন	1136	<i>ე</i> ც.p
<b></b> ক5'বদুশ্ব	٠	900.0
<u>ตุ</u> ะผ.บฐ์มผ	2230	

# শ্ব্দুন্ন্ত্রীন্ধ্রা (Data Analysis)

## श्र्वनःस्वाःष्ठ्ः ह्रिन्ताःशःश्चिःनःर्लन्।अन्।श्चिःश्चेन्।

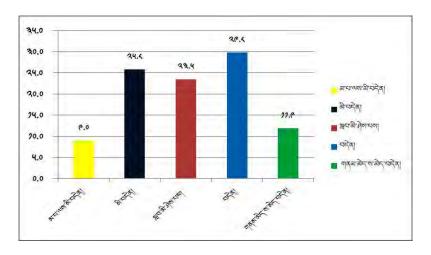
अब्दर्भः पद्गतीश्चीं, प्राण्याकाः स्थान्त्रीयक्षेत्रायक्षाया । अस्यप्तः द्वायप्तः प्राण्याक्षः अव्यक्ष्यः स्थान कालका १९०१ प्रयेता लयः त्यानाः सुद्धः प्रप्तः विश्वायः प्रयापः अविद्धः स्थान्यः स्यान्यः स्थान्यः स्थान्यः स्थान्यः स्थान्यः स्थान्यः स्थानः स्थानः स्थानः स्थान्यः स्यान्यः स्थान्यः स्थानः स् २४.६ं.लटाम्योबास्प्राञ्ची. भेबारम्म् इस्याद्धस्याप्ते स्वाप्त्यास्त्राच्याम् विष्यास्य प्रमास्त्राच्यास्य स्वाप्त्यास्य स्वाप्त्यास्य स्वाप्त्य स्वाप्य स्वाप्त्य स्वाप्य स्वाप्त्य स्वाप्य स्वाप्त्य स्वाप्य



१.१) यर रेश महेशय। हेंदाव शुः र्धे न व्येत् सेत् की न की विव की र्भेत्

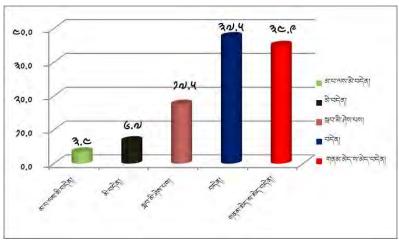
### य र्र्सुन'स्वार्कुः र्हेटायदेः त्यानाये दान्दर्भयार्थे दान्नी: प्रथयार्थेटानी: र्सूना

सेरे. तर्रु. अ. चोर्ट्चेच्या ह्रिटाच. जचा. जुषे. तहाच. बु. चुरे. चुमें - व्यूच. खुंचा वृत्ता चु. क्षें न चु. खुर. ची. खुर. खुंचा खुंचा न चु. खुंचा चुंचा न चु. खुंचा चुंचा च



१.५) धर-देश मासुसाय। हॅनावदेश्यमायोत् द्रान्तिसार्यातः कुः दुस्य र्स्ट्रीन विष्णुः र्सून्।

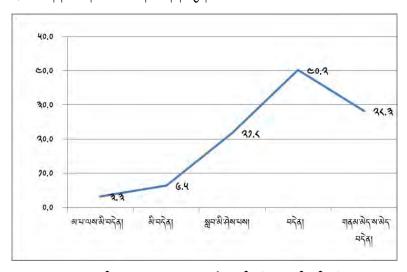
श्चिर-वैश्वाण्याश्वाश्चिश्चाय अश्वाश्चार विश्वाप्त विश्वापत विश्वा



गलिट.मी.मुट.वींश्वर.जीश.क्येर.जीयश्चर्या.ख्या.कुंट्य.सूर्या संबिट.मी.मुट.वींश्वर.जीश.क्येर.जीयश.स्था.लुंट्य.जी.सूर्या

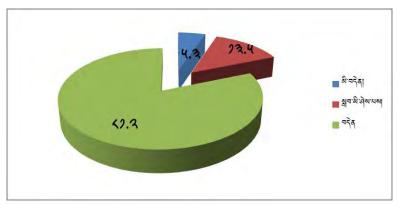
### ८ इ.बाबिर्ट्रायमुजानपुःश्चिषी

ण्यः ची,चर्यं साल्र्स्त्राण्यं स्थाप्त्रं स्थाण्यं तयन्त्रं स्थाण्यं स्थाप्तं स्थापंतं स्थाप्तं स्थापंतं स्यापंतं स्थापंतं स्यापंतं स्थापंतं स्थापंतं स्थापंतं स्थापंतं स्थापंतं स्थापंतं स्यापंतं स्थापंतं स्थापंतं स्थापंतं स्यापंतं स्याप



७.५) धररदेशक्षाया अग्विद्यद्यायाचरक्षेत्रिव्यह्मावियाचीक्षेत्र

सूर्य अपूर करा दी. ग्रींची द्रवी लूट शायतुं जा यदा जा साम सूर्य स्वी क्षी प्राप्त स्वी पायतुं स्वी पायतुं स्वी द्वी पी. पी. पर पर प्राप्त स्वी पायते स्वी



७.७) सर.रूभ:ड्रुषा:य| र्श्नेषा:र्थन:र्श्वेय:क्रिय:क्रुंस्य:र्श्नेय:र्श्वेय:क्रुंस्य:क्रुंस:क्रंस:क्रुंस:क्रंस:क्रुंस:क्रुंस:क्रुंस:क्रुंस:क्रंस:क्रुंस:क्रुंस:क्रुंस:क्र्रं

# ह्राय.पी.श्री.य.यमुद्रीय.वयमा.ग्री.जभा.म्रीया

ફ્રેંયત્વર ફ્રિંયા ક્રેય-ટ્રેશ્ના તર્ફ્યા ક્રેય ક્રેયા સ્વર્ય સ્

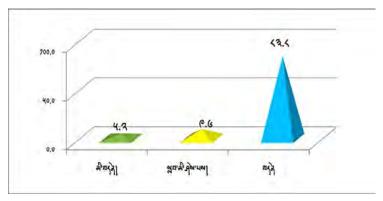
त्यम् कुस्तालस्य दे, चर्चिका अपु. मूं. चर्चु, जस्य स्था क्षें. जम् तरहे या तहा न मूं तरियो ज्ञा न न मूं ट्रिये जी क्षें त्या क्षे त्या क्षें त्या क्षें त्या क्षे त्या क



११७) यर रेस पतुत्रय। हेंदाव सुर्श्वेप प्रभेत प्रवस्थ छै। यस स्वाप्त स्वाप्त स्वाप्त स्वाप्त स्वाप्त स्वाप्त स्व

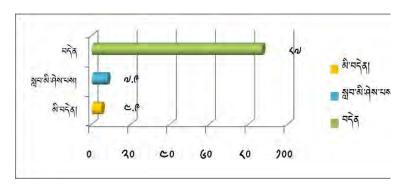
# <sup>ન</sup> ફ્રેંદાવાલું વર્ષ્ક અર્કેદ વસુેદ કદ્યાં છે. લયા ફ્રેંય લેં. ફ્રેંદા કર્વા ત્રામેં ન

ૹૢૡૹઃક્રી. શ્રીયાલવસાલદ્યું પ્રતાસક્ષ્યાન ક્રિયાલા કર્યા વર્ષા કર્યા સ્થાન કર્યા કરા કર્યા કર્ય



र हॅ्टाय पर्ने मेश क्रुयायन क्रुप्तर प्रत्याप्त पर्ने स्वार्थे माश्या प्रत्ये प्रत्या क्षेत्र स्वार्थे प्रत्या पर्नु म

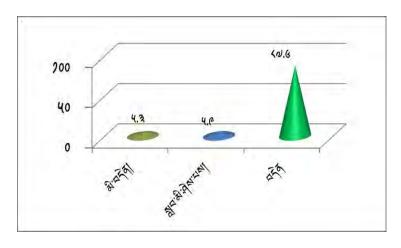
मुन्ना अश्यत्रियोत्राज्यायत्रात्र्यात्र्यं स्ट्रांस्य अत्यात्र्यात्र्यः अत्यात्र्यः अत्यात्र्यः अत्यात्र्यः अत्यात्र्यः अत्यात्र्यः अत्यात्र्यः अत्यात्रः अ



यर:देश:त्गु:य। हॅराय:पर्नेग्नेश कुष:प्यतःग्री:र्राद्यात्र्यः यदःर्वेग्रशःगःनेःश्वेः पर्यत्यःश्रीदःव,यहगःश्वेयःग्री:स्राद्याः यदःर्वेग्रशःगःनेःश्वेः

् र्हेरायः पर्ने पन् मा पर्हे तुः सः प्रवन् पः ठेतः कुषः मचः ग्रीः स्टन् पटः सुः हेत्। माः स्वन् पर्वः मीः पर्वः स्वान् स्वान्धः स्वान् स्वान्धः स्वान्यः स्वान्धः स

चन्नशायकर द्वीं नर्गी दे प्रदेश वाल दाल द्वा के स्वा ताल कर के स्वा ताल कर के स्वा ताल कर के स्वा ताल दे ताल दाल दे ताल ताल कर के स्वा ताल कर के स्वा ताल दे ताल दाल दे ताल ताल कर के स्वा ताल कर के स्व कर के स्व ताल कर के स्व कर कर के स्व कर कर के स्व कर के स्व कर कर के स्व कर कर के स्व कर कर के स्व कर



अन्। यह मालिया के स्वाप्त के स्व

### র্থাম্প্রা (Discussions)

तर्चियां भ्रास्त्री, श्रंश्रां स्थारं स्थार

- क्ष्,यटाजटकास्त्रः चलवा,रेज्यात्युःचलकातकराष्ट्री, लट्ट्यां इत्राची, योषका क्षर्यं रेट्टाचक्षेयं ततुः क्ष्राचा, श्रृंचा क्ष्यां स्त्रीच त्यवरा रेज्यात् स्था श्रृंचा चौत्य रेज्यात् स्त्राच्या स्त्रा

- म् विष्यतः चस्रस्य स्वात्रक्रम् स्वात्रम् स्वात्रम् स्वात्रम् स्वात्रम् स्वात्रम् स्वात्रम् स्वात्रम् स्वात्रम् त्युः सम्बोत्रम् स्वात्रम् स्वात्रम् स्वात्रम् स्वात्रम् स्वात्रम् स्वात्रम् स्वात्रम् स्वात्रम् स्वात्रम् स्व स्वात्रम् स्वात्रम्
- यद्गतश्चर्याक्षर्यस्य रचा निकायन्तर्भात्तर्यम् त्यात्त्रीयाः चित्रम् त्यात्त्रीयाः वित्वा वित्वा वित्वा त्यात्त्र त्यात्त्र त्यात्र वित्वा त्यात्त्र त्यात्र वित्वा त्यात्र त्यात्र वित्वा त्यात्र वित्वा त्यात्र वित्वा त्यात्र त्यात्र वित्वा वित्वा त्यात्र वित्वा वित्वा त्यात्र त्यात्र वित्वा वित

### র্থান্তক্র্বা (Recommendations)

ત્યાં સાર્કે. ત્રુપા સાર્કે. ત્રુપા સાર્કે. ત્રુપા સાર્કે. સાર્ચે. સા

श्रास्त्र ह्मित्र में त्यूर मे त्यूर में त्यूर में त्यूर में त्यूर में त्यूर में त्यूर में त्यू

केर.मूर्यायक्षेत्रःखणायङ्क्षमाञ्च्यामा मूर्यायक्षेत्राचेत्राचेत्रः भूता मूर्यायक्ष्यायम् मुद्राचेत्रायक्ष्यायः मूर्या स्थायः मुद्राचेत्रायः मुद्राचेत्रः म

क्रिश्नम्पूर्ट्रत्यं र्वाचा म्रैंव-क्री-द्रियं र्वाचा म्रैंव-क्री-द्रियं विष्यं विष्यं विष्यं विष्यं विष्यं त्रह्यं त्रह्यं रह्यं र

ढ़ॖऀवाया ह्रॅटायास्यायहेष्यायस्यत्वाचान्हेष्यायास्यक्ष्याच्यात्वाक्ष्याच्यात्वाच्यात्वाच्यात्वाच्यात्वाच्यात्वाच प्रवादात्वाच्यात्वाच्यात्वाच्यात्वाच्यात्वाच्यात्वाच्यात्वाच्यात्वाच्यात्वाच्यात्वाच्यात्वाच्यात्वाच्यात्वाच्य व्याप्यत्यात्वाच्यात्वाच्यात्वाच्यात्वाच्यात्वाच्यात्वाच्यात्वाच्यात्वाच्यात्वाच्यात्वाच्यात्वाच्यात्वाच्यात्व व्याप्यत्यात्वाच्यात्वाच्यात्वाच्यात्वाच्यात्वाच्यात्वाच्यात्वाच्यात्वाच्यात्वाच्यात्वाच्यात्वाच्यात्वाच्यात्व व्याप्यत्यात्वाच्यात्वाच्यात्वाच्यात्वाच्यात्वाच्यात्वाच्यात्वाच्यात्वाच्यात्वाच्यात्वाच्यात्वाच्यात्वाच्यात्व

ૹ્ટન્નપાડ મેં. છું. છુંદ્રસ્ટિર ક્ટલ્રુવે ત્રન્ડ ફ્રેંદ્રાયુ વેદ્રાયે. વસું ને મૂન્ડ ફ્રેંન્સ્યુરે લેવ લવે. નપ્રેર ને વેદ્રાયો કર્યો ત્રેર કર્યો ત્રેર કર્યો ત્રેર કર્યો ત્રેર ને સ્ટેર ને સ્ટિર મુન્ડ સ્ટેર ને સ્ટેર સ્ટેર સુવર સુવર ને સુવર સુવર સુવર સુવર ત્રેર કર્યો ત્રેર ને સુવર ને સુવર ને સુવર સુવર સુવર સુવર સુવર ને સુવર ને

द्रम्भायायव्यव्यव्यन्त्रत्तृत्वाचेरालु देखी वा हिरायते क्षेत्र यहेता व्यव्यव्यक्षित स्थाय विश्व विश्व क्षेत्र य प्रमायक्षेत्र त्या विश्व व विश्व विश्

<u> २ त्यापा अयावस्थाया हे त्याप्यत्य प्रस्तः हॅटायः श्रीटः स्रीतः क्षेतः सर्वतः क्षेतः क्षेतः क्षेतः क्षेतः क्ष</u>

लार. १०१, १००, ४००, ४०४, ८०७ ध्रीम्बायम् । विद्यान्य स्थान्य स्थान्य

## बैन'वर्केंब'वर्देवेंक्'र्वांद्रिष्ठ्र (Limitation)

पद्ग्रीशायचरी-प्रपुत्तश्चीस्याचरिसालशा यद्द्विस्श्चिंतास्वीताक्वीत्रस्याचित्रविष्यायविष्यायाच्याच्याचित्रस्याचित्रस्य स्वाप्त्रस्य स्व

चौ.चौ.म्.जश्च. भु.चोटश्व.क्ष्ट्यः झें.क्ष्ट्यः स्थित्रश्चर्यः ची.चौ.म्.ट्याः स्थित्यः स्थित्यः स्थित्यः स्थित्यः स्थित्यः स्थितः स्यितः स्थितः स्यितः स्थितः स्यतः स्थितः स्थितः

### মহ্গ্'ন্ম্বা (Conclusion)

### चगायः देवः द्रगायः र्केन। (Acknowledgement)

याह्नर्-प्राचिरक्ष, चा-र-जिंग्यापरह्ने र-प्राचित्रक्ष्मर ज्ञान्त्र स्वाच्या स्वच्या स्वाच्या स्वच्या स्वच्

### मुप'हेबा (Reference)

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# RABSEL – the CERD Educational Journal Guidelines for Manuscript

#### RABSEL - the CERD educational journal

The CERD *Educational Journal* is published twice a year in spring and autumn by the Centre for Educational Research and Development, Paro College of Education, Royal University of Bhutan. The Journal welcomes contributors which promote the exchange of ideas and rational discourse between practicing educators, researchers, planners, administrators, educational thinkers and practitioners, learners and policy makers from Bhutan and abroad. To this end the Journal publishes articles on empirical and theoretical studies, research reports, commentaries and scholarly reviews that attempt a systematic analysis or synthesis of educational processes and systems from different viewpoints and approaches.

#### **Notes for Contributors**

Manuscripts are considered for publication with the understanding that they are original material and have not been submitted elsewhere for publication. Submission of a paper to a professional journal is considered to be a definite indication of the author's commitment to publish in that journal. A paper submitted to this journal while it is under review by another journal is regarded as unacceptable. Submitting an already published manuscript is considered to be unethical. The author should consult the Editor if he or she has any questions to whether or not the paper is suitable for publication.

#### **Editorial Procedures**

The CERD Educational Journal is a peer reviewed research journal. All papers considered appropriate for this journal are reviewed anonymously by at least two outside reviewers. The review process usually takes one to two months. Papers are accepted for publication subject to nonsubstantive, stylistic editing. The Editor reserves the right to make any necessary minor changes in the papers, or request the author to do so, or reject the paper submitted. A copy of the edited paper along with the first proofs will be sent to the author for proofreading. They should be corrected and returned to the Editor within 10 days. Once the final version of the paper has been accepted, authors are requested not to make further changes to the text.

#### MANUSCRIPT SUBMISSION GUIDELINES:

The CERD *Educational Journal* is a multidisciplinary publication presenting research and scholarly reviews related to education. Guidelines specified herein were prepared for the convenience of authors, reviewers and publishers.

#### Types of articles

Three types of manuscripts are appropriate for submission to CERD journal (a) Reports of empirical research, (b) Scholarly reviews (c) Project reports

#### Reports of empirical research

Reports of empirical research are descriptions of research studies. These studies must have clear and important implications for education and/or research. CERD considers research representing diverse methodologies, including group design, single-subject research, case study etc. The major criteria for publication are quality of design, imple-

mentation, and writing, as well as importance to the field.

#### Scholarly Review

Scholarly papers take the form of essays that represent well-developed arguments on philosophical, theoretical, or practical problems in the field of education. They are not required to adhere to an empirical research design (i.e., methods, data collection, and data analysis). Instead scholarly papers pose analytical or conceptual frameworks.

Scholarly papers should contain as many of the following as are applicable, preferably in this order: (1) objectives or purposes of the inquiry; (2) the philosophical, theoretical, or practical argument; (3) literature, sources, or evidence to support the argument/analysis; (4) conclusions and implications of the argument; and (5) significance of the argument

#### **Project reports**

These articles will be shorter and more preliminary reports about interesting educational projects (innovative courses, learning communities, etc.). Several of these reports could be published in each issue. The focus of a project report is on the progress or outcomes of an academic innovation that addresses issues in education.

#### PREPARATION OF MANUSCRIPT

#### Manuscript preparation guidelines

- 1. Manuscripts are accepted both in English and Dzongkha (National Language).
- 2. Authors should follow the guidelines in the Publication Manual of the American Psychological Association (APA, 6<sup>th</sup> Edition) as a primary reference.
- 3. The length of the manuscript should not exceed 5000 words excluding the title page, abstracts, tables and figures, references, and biographical information.
- 4. Manuscripts should be prepared in the following order: title page (including Acknowledgements as well as Funding and grant-awarding agencies); abstract; keywords; main text; references; appendices (as appropriate); table(s) with caption(s) (on individual pages); figure caption(s) (as a list).
- 5. The abstract of 150-250 words are required for the manuscripts submitted. The manuscript should also have about 3 to 6 keywords.
- The manuscript should include the author's names, institutional affiliations, mailing addresses, email addresses, telephone and fax numbers on the cover/ title page (page separate from the body).
- 7. The manuscripts should be submitted along with a short biographical note. The biographical note should not exceed 150 words.
- 8. All pages should be numbered appropriately in the bottom right corner.
- The use of Endnote and footnote is not encouraged. However, where the use
  of endnotes is necessary for the manuscript, the effort should be to minimize
  their number. Endnotes should be placed at the end of the paper immediately
  before the list of references.

 The Editorial Board reserves the right to reject a manuscript without substantive reasons, if it does not fulfill the manuscript guidelines as specified.

#### **Tables and Figures**

- 11. All tables and figures must be numbered in the order by Arabic numerals in which they appear in the manuscript (e.g. Table 1, Table 2). In multi-part tables, each part should be labeled (e.g. Table 1 (a), Table 1 (b)).
- 12. The caption should be provided for each table, figure or symbols. All the figures and tables must be included in the text. The photographs or graphics are also considered as figures.
- 13. A reference to each table or figure should be made in the text. All the measurement units and abbreviation must also be defined appropriately.
- 14. Author must provide the highest quality figure format possible. A highest quality imported or scanned material must be used in the manuscript.
- 15. The Times New Roman Font on all graphics must be used.
- The use of electronic or graphic files must be window-compatible (e.g., BIP, GIF, JPG).
- 17. The author should also on a separate document page submit all the tables, figures or images that are used in the manuscript.
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- The manuscript should be sent as an e-mail attachment to the Editor in Chief or the Production Editor of the journal at cerd.pce@rub.edu.bt / rameshthapa.pce@ rub.edu.bt
- 2. All manuscript submissions should be in a Word "doc" file or in a Word-com patible file with top, bottom, left and right margins set to one inch, and Times New Roman 12 point font.

#### **Editorial correspondence**

Any inquiries related to RABSEL-the CERC Educational Journal, including manuscripts for submission, should be addressed to: the Dean Research and Industrial Linkages (Mr. Sonam Dorji), Editor in Chief at cerd.pce@rub.edu.bt or Ramesh Thapa, Production Editor at rameshthapa.pce@rub.edu.bt

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