Centre for Budget and Policy Studies

THE KALIKAYATNA APPROACH TOWARDS PRIMARY EDUCATION

A Study of the Learning Initiative of Prajayatna

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CHAPTER 1

Introduction

Education and learning are major social activities undertaken by every society. While learning refers to a "..process of change that occurs for the individual", education refers to a "transactive process between an educator and student…[that may] include the larger institutional forces (e.g., the educational system)" (Itin, 1999, p.91). Though different constructs, education and learning are also integrally linked to each other. Conceptions of education have a bearing on how structured opportunities for learning are made available to children, and theories of learning underpin the formal structuring and planning of education. Therefore, understanding these interlinkages is important, particularly in the context of contemporary, modern societies within which education has become a formal enterprise regulated to a large extent by the state and other supra-national organisations such as the UN agencies.

The approach to learning adopted and undertaken within formal education systems have long been recognised to perpetuate a politics of knowledge - that is, to valourise a particular worldview and way of being, that often privileges dominant groups within society. Historically, this has also led to contestations over the meaning of, and goals for education (Kincheloe, 2008). Questions about "what is worth teaching" (Apple, 1990; 2004; Jain, 2015; Kumar, 1983; 2004; Young, 1971), and how this must be transacted have been significant points of contention (Bernstein, 1971; Burman, 2007; Freire, 2005; Kumar, 2004; Lingard, 2009; Miller and Seller, 1985; Scherff and Spector, 2011). While the dominant models of education have been recognized to be geared towards preparing learners for adulthood and future socio-economic roles (Becker, 1993; NCERT, 2006a; Peters, 2001), thus "...institutionalis[ing] the distribution of knowledge and skills so as to perpetuate the relative class status of different groups in society" (Heredia, 1995, p.893), alternative approaches to learning have emphasised the inter-relations between individual experiences, social contexts and pedagogic structures, and knowledge use or transfer (Brown et al., 1989; Clayden et al., 1994). The latter approach has been considered to be important for reversing the historical disadvantages faced by marginalized communities in relation to education. Undertaking this requires a systematic analysis of the philosophies or theories of learning that underpin curricular and classroom transactions, which is undertaken in the following section.

1.1 Learning Theories and their Influence on Classroom Practice

The two predominant approaches to learning can be classified as behaviourist and constructivist. The behaviourist approaches to education and learning view knowledge as a set of behaviours, and learning as a set of passive, mechanical responses to environmental stimuli. Within this approach, learning is conceptualized as an individualised, universal psycho-physical phenomena (Kumar, 2004; Livingston and Sawchuck, 2000) that involves acquiring a standardised, distinct body of information that has been pre-specified in detail (Gipps, 2003). Further, within the educational process this pre-specified knowledge is broken down into small units and bits of information that can be recalled and tested (McKernan, 2008). Classrooms are teacher-centred, and learners are seen as accumulators of this knowledge.

The behaviourist approach to learning assumes that the teacher can generate the same type of learning in every child irrespective of background, through a pedagogic process of imitation, which assumes that

(a) Children are blank slates, and come to the classroom without knowing how to do certain tasks;

(b) All children can equally be taught to complete the task by being shown how to do the task, through the use of pedagogic strategies of modelling, observation, imitation, repetition and practice; and finally

(c) The child wants to do the particular task set for them by schools

Thus, assessment within this system has "… consist[ed] of checking whether the information has been received" (Gipps, 2003, p. 24), and learning has been equated with 'classroom performance' (Wolcott, 1982), or 'school work' (Gipps, 2003). This has been true within the Indian context as well, with the NCERT (2006) position paper on the *Aims of Education* similarly noting that the means-end approach to learning has rendered it an isolated, perfunctory activity that is not connected in any organic manner to children's everyday lives.

Learning theories within the Behaviourist Paradigm*

Behaviourism: knowledge is viewed as a repertoire of behaviours; action provides rules for knowledge. Knowledge is therefore a set of passive and largely mechanical responses to environmental stimuli.

Social Learning Theory: Attention, memory and motivation are emphasized. People are seen to learn within a social context through observation and practice. This approach emphasizes the need for positive role models.

Cognitivism: was influenced by the emergence of the computer as an information processing device. This theory is more learner centric examines how a learner processes information in his/ her brain, based on observation of responses to stimuli. The cognitivism approach places emphasis on mental processes such as thinking, memory, knowing and problem solving.

All behaviourist approaches do not give much important to social interaction among the stakeholders or on the socio- cultural context of learning.

*Information obtained from *http://www.learning-theories.com/behaviorism.html*

Critics of this dominant approach to education have referred to it as the 'banking model' of education in which knowledge is deposited as bits of information into learners' heads (Freire, 2005). Others, such as Bruner (1996), point out to how within such as approach there is no room for negotiation and dialogue, wherein learners can bring their own knowledge to bear and instead learning is equated with 'habits' that can be induced into the child. Even with the introduction of social learning theories, that sought to account for certain cognitive processes and the role of intention, motivation and environment in determining the outcomes of learning, the behaviourist approaches largely present a static model of learning, within which stimuli for learning and responses are arranged into a linear equation that allows the process of learning to be predictable and controllable.

Alternative critical and constructivist approaches instead highlight the situated nature of knowledge, and the socio-historical conditions under which it is produced. Critical and constructivist scholars of education have argued that the school curriculum has represented just one part of, and one way of organising the vast universe of knowledge (Apple, 2004; Kincheloe, 2008). Within these alternative models of constructivist, experiential and critical pedagogies, school learning has been seen as part of a broader, more expansive conception of learning that takes place across multiple contexts of schools, streets, families and neighbourhoods, or within communities of practice (Freire, 2005; Kincheloe, 2008; Lave and Wenger, 1991; Levinson and Holland, 1996). Consequently, learning is understood as an "…intervention in [an] ongoing knowledge-construction process (Resnick, 1989)" (Gipps, 2003, p.22; Gipps and MacGilchrist, 1999, p.47; Thomas, 2014, p. 16), that centrally involves the act of meaning-making. Others such as Livingston and Sawchuck (2000, p.127-128) describe it as an "expansive social phenomenon…of reflection and experience in culturally and historically specific terms", or as a process of 'enculturation'(Brown, Collins, & Duguid, 1989), leading to "initiation into communities in pursuit of worthwhile knowledge" (Alexander, 2005, p. 343). Within such approaches, learners are understood as "...competent participants in and producers of situations which include, as a central dimension, 'learning'" (Livingston & Sawchuck, 2000, p.128). Thus, learning is seen as a process in which "…students and teachers jointly engage in knowledge construction and in which teachers progressively turn over metacognitive functions to the students, so that students are taught how to learn, [and this] can result in learning being an intentional process" (Gipps, 2003, p.23). The classroom approaches that emerge from this process are usually more child centred. There is greater room for negotiation and discussion. Learning is not viewed as accumulation of skills, and consequently 'learning outcomes' or failure to attain the desired outcomes is seen not just as problems of individual learner deficits but are contextualised within a broader frame of situated practice.

Experiential learning

Experiential learning is a move away from didactic forms of learning. Knowledge is acquired through experience and doing. Experiential learning theories are not new. John Dewey (1859-1952), Carl Rogers (1902-1987), and David Kolb (b. 1939) have worked on learning theories that focus on learning through experience or learning by doing. Experiential education focuses on problem solving and critical thinking rather than memorization and rote learning. A key element of experiential learning, therefore, is the student, and that learning takes place (the knowledge gained) as a result of being personally involved in this pedagogical approach.

Social Constructivism[+]

The social constructivism theory emphasizes the role of collaboration in learning. It is a variety of cognitive constructivism; it was developed Vygotsky. In the 1980'sand the 1990's the work of the Russian psychologist Lev Vygostsky (1896-1934) became available. These theories placed greater importance on social contexts of the learner and on collaborative learning. According to Vygotsky it is difficult to separate the social context from learning. Methods in collaborative learning, focus on the building of teamwork skills. Individual learning should be looked at within the larger context of group learning.

[+] Information obtained from *http://www.learning-theories.com/*

However, despite this recognition of the limitations of behaviouristic approaches to learning and the benefits of alternative constructivist models, dominant models of practice world over continue to be behaviouristically oriented. Thus, Garrison and Neiman (2003) have stated that even when 'behaviourism' has long been philosophically dead, practically, it continues to dominate education. Within the Indian context, scholars such as Kumar and Sarangapani (2004) have similarly noted that "The popularity of behaviourist methods of teaching, teacher training and assessing [have] remained largely undisturbed, and continue to be in use even now." Others such as Smeyers et al., (2007, p.4) have argued that within education there is a "fixation with assessment and league-tables and the reconstitution of the pupil or student as a collection of programmable skills." Carr (2005) has pointed out that in this manner, schooling has become a means of behaviour modification, control and conformity through an emphasis on standardized curricular packages (as cited in Sultana, 2000, p.1668). Thus, tight standards for conformity and non-conformity (Moore, 1983) are set up, and failure (academic or behavioural) among large sections of students is pointed out to be due to personal factors such as lack of interest, motivation, etc., rather than due to the system's inability to cater to diversity or social transformations. With learning treated as an isolated activity, far-removed from children's life-worlds and social contexts, this has had implications for the development of learners' longterm understanding and ability to participate in the society and economy also. For example, scholars such as Entwistle (1992), Gipps (2003) and White (1992) have pointed out that the dominant behaviourist approaches to education have led to a form of 'shallow learning' in which there is an acquisition of principles from teachers and other instructors, without a deeper consideration of its meaning (Gipps, 2003). Others, such as Brown et al. (1989) and NCERT (2006) have also argued that this has essentially amounted to an acquisition of a discipline and its tools (e.g., concepts, procedures) without a deeper knowledge of its culture (Brown, 1989; NCERT, 2006). This, it is argued limits the manner in which this knowledge can be used.

Further, this inability to use knowledge in more meaningful ways has particular implications within stratified educational context such as ours, wherein social backgrounds of caste, class, gender, religion, geographical location, linguistic access, etc., all influence the outcomes of learning. Thus, paying attention to how learning is conceived of and structured within the formal, national education system is crucial to ensuring a more just and equitable education system.

Table 1: Key features and differences of behaviourism and constructivism

	Behaviourism	**Constructivism**
Assumptions about the child's nature.	Responsive to the environment	Interacts with the environment
Antecedents	Conventional pedagogies; notion of knowledge as something received and to be transmitted.	Ideas and innovations associated with Rousseau, Dewey, and Montessori. Knowledge created by action and in the course of relating to reality.
Emphasis	Making outcomes predictable.	Individual development

Implication	Teacher looks for proof of learning.	Teacher observes and responds to the child's progress.

Source: Kumar and Sarangapani (2003)

In the following section this point will be elaborated on further by examining the practices of learning within the Indian education system and situating it within the historical context of colonialism and post-colonialism that has impacted the developments of education within the country.

1.2 Learning in the Indian Context

Traditionally, formal education in India was largely guided by caste considerations and the concept of mass education did not exist. Most of the non-brahmin castes as well as girls belonging to all castes and communities had no access to formal academic education. Girls remained outside the purview of this even when princely states such as Baroda, part of the modern day Gujarat and Travancore, part of the modern day Kerala, initiated state actions for 'universalizing' primary education, girls were outside the purview of these efforts. The colonial British rule for the first time tried to introduce mass primary education but that too was far from being an equal system of education for all. : The colonial system of education had very different motives: the main focus of the colonial education system was to a. 'civilise' the native in Western ways of thinking and being, through exposure to colonial language, literature and science; b. to create a clerical workforce for occupying positions within the lower rungs of the colonial administration (Seth, 2007). Therefore, emphasis was laid on the accumulation of these skill-sets necessary for the accomplishment of certain tasks. Further, the colonial system of education also resulted in the institution of a stratified education system wherein access to the supposedly 'superior' Western education was afforded only to the upper castes and other elite sections of society.

Post-independence, India had thus to grapple with the problems of educational stratification as well as a lack of technical manpower required to support the national-building plan for industrialisation and self-dependence. Thus, the earliest education plans were focused on these twin problems of achieving equity (through universalisation of elementary education) and quality (through efforts at moving away from the largely rote-based colonial legacy) within education, alongside the need for achieving self-sustainability through the development of an educated citizenry, indigenous science and industry, and a technically qualified workforce. The first education policy, in 1968, laid the path for addressing equity in education by advocating a common schooling system, and also for improving science and technology in the country. However, the former vision was neither backed by adequate educational outlays, nor political actions, and India largely saw a shift in the subsequent education policies and programmes including the National Policy on Education (1986), which have advocated for multiple and alternative tiers of schooling, instead of a common schooling system.

The issue of quality has bothered the policy makers as reflected in the formulation of a large number of schemes focusing on some aspect or the other that could be seen as impacting the quality. Initially, the focus was on covering the resource gap in primary schools: covering aspects of physical infrastructure, teachers as well as learning materials. Operation Blackboard, a national programme initiated in the 1970s, made provision for at least two teachers, two rooms and a box full of educational materials for every primary school in the country. It also provided for a short training of teachers on the use of those materials. Although critical for its acknowledgement of the need for minimum basic inputs to enable learning, OBB did not recognize that mere presence of physical infrastructure, teachers and aids do not ensure leaning, something that became very clear in the subsequent years. Subsequent programmes, especially, state specific projects such as Shikshak Samakhya in Madhya Pradesh, Bihar Education Project in Bihar, Lok Jumbish in Rajasthan, Andhra Pradesh Primary Education Project in Andhra, UP Basic Education Project in Uttar Pradesh and later the national programme, the District Primary Education Project (DPEP) attempted to look at primary education more holistically and gave both teacher training and classroom processes much greater importance. While the classroom transaction processes were slow to change especially as it involved millions of schools and teachers, the pressures mounted high both to expand the system fast to be able to enroll the vast number outside the fold of schooling as well as to prove the change in quality using measurable indicators. This lead to two kinds of development: one, a large number of alternative, largely low-cost, schools emerged to fast track the enrolment, and two, large scale learning assessments became the established measure of learning.

While the jury is still out on the impact of the alternative systems on the quality of the primary schools in India with evidence on either side, Sarva Shiksha Abhiyan (SSA) started as a nation-wide programme to universalize primary education further and made attempts to push both the quantity and quality agenda albeit without much success in the latter. The recent introduction of the Right to Education Act (RTE, 2009) has done away with the multiple modes of delivery by making definite infrastructure and teachers norms and making comprehensive and concurrent evaluation mandatory by doing away with the examinations, the concern regarding quality and equity in education still remains. The Right to Education 2009 (RTE) converted what had previously been a part of the Directive Principles of the Constitution into a fundamental and therefore justiciable right for every child between 6 and 14 years of age. This has translated into eight years of free and compulsory education for all children. Further, this has sought to do away with alternatives to formal education. However, while it has perhaps been able to address the issue of access, enrolment and retention to some extent, the learning process itself has not been significantly altered by this Act. Moreover, increased enrolment from hitherto educationally deprived sections of the society brought newer challenges to schools, as these children did not have educated parents and a literate environment at home. Teachers and the school system were largely not adequately prepared to address this challenge, and this remains an issue till today; the problem has grown even more in proportion and complexity with increased enrolment from disadvantaged groups and withdrawal of the educated middle class from the government run schools. Thus, in the Indian context attempts to address access and retention have largely remained delinked from questions of quality, and this has had serious consequences for ensuring equity and justice through education. As various educational surveys undertaken by the state and civil society (though at times questionable with respect to soundness of methods and other related grounds) have shown, learning levels and outcomes have remained abysmally low despite the different measures taken to improve education. These reports have shown that the number of children who can read and recognize numbers at a certain level has been decreasing over the years in government schools, even

though enrollment has increased over the years (National Achievement Surveys – NAS, NCERT, various Rounds and ASER, various Rounds). Particularly, with the expansion and increased participation within schooling of different groups, many of whom are first generation learners, the classrooms have become much more diverse, and the teachers have largely been completely ill-equipped to handle such challenges; the separation of the quality question from the equity issues stands out as a lacuna in education policy and planning even today. At the same time, there are important policy documents where one sees a clear effort to mitigate this distinction: the National Curriculum Framework (NCF, 2005), which has been recognized as a progressive national educational framework for formal education in the country, is one such example.

Operation Blackboard (OBB): was one of the first schemes started in the 1980s to improve the quality of education through physical provisioning and increase in basic physical infrastructure. The scheme specified a minimum norm of at least two teachers and some learning materials /aids in every school.

District Primary Education Programme (DPEP): was the first national level programme, started in 1994 with external/foreign funding to improve access and quality of primary education in the country (Geetha Rani, 2006; Velaskar, 2010) modelled on, and followed a series of smaller bilaterally funded projects (e.g., Andhra Pradesh Primary Education Project, Bihar Education Project, Uttar Pradesh Basic Education Project, Lok Jumbish in Rajasthan). The DPEP recognized the importance of the decentralized planning, emphasized teacher training and other capacity building efforts, created decentralised academic support and monitoring structures and made an attempt to improve the school performance towards delivery of worthwhile learning to every child. DPEP also promoted experimentation and collaborations with non-State actors in education leading to development of various teaching approaches in different states. The jury is still out on the impact it had on the school-system and the quality of learning. However, it has been critiqued for narrowing the vision for education, and adopting explicitly economic goals (Sarangapani and Vasavi, 2003; Velaskar, 2010). Further, it has been pointed out to have achieved little with respect to achieving equity with quality, considering the alternative educational arrangements for disadvantaged groups that it sanctioned (Jalan & Glinskya, 2003).

Sarva Shiksha Abhiyan (SSA): followed DPEP and is being implemented in the entire country. SSA has retained some of the DPEP approaches while modifying a large number of elements in order to ensure universalisation of enrolment and retention within primary education on a mission mode. While the SSA has again been critiqued for diluting quality with its emphasis on infrastructure, sanctioning of alternative schooling approaches, adoption of para-teachers, etc, it has also been recognised for promoting and upscaling innovative approaches.

Some state schemes and programmes to improve the quality of education within the Indian context

Innovations in education

Hoshangabad Science Teaching Programme: was started in 1972 in 16 government schools in the Hoshingabad district of the state of Madhya Pradesh. It then spread to other schools across the state through efforts made by two voluntary organizations Friend's Rural Centre, Kishore Bharathi, Ekalavya and the Government of Madhya Pradesh. The HSTP attempted to substitute rote learning with real understanding. Children within this programme were encouraged to perform experiments and learn on their own, record observations and derive conclusions. Though closed down in 2002, the HSTP led to various discussions rooted in theories of learning, such as on whether content should reflect the cultural and social location of the child; what language is to be used while teaching a child, etc. These discussions have formed the basis for NCF 2005.

River Project: The River Project, was an effort to provide alternative educational experiences to students around the Rishi Valley School, through an emphasis on village-based education, training in multi-grade, multi-level teaching, that includes lessons on biodiversity and the local environment in which schooling is undertaken, and other issues of health, sanitation, and nutrition that form a part of everyday living. Recognising the challenges of everyday schooling, and the difficulties of managing a resource-poor multi-grade classroom in the Indian context, with poor training, the River experiment developed the idea of the "school in the box". The goal of this was to provide children with a tool that will help them learn on their own, independent of the teacher. The 'tool box' developed by the River project has also been influential in several other states and also countries such as Ethiopia.

Paying attention to curricular approaches highlighted by these various educational experiments, and previous education reports on 'Learning without burden', the NCF 2005 has highlighted the importance of connecting school knowledge with the everyday worlds of learners; moving away from a textbook centric approach to learning and fostering instead a holistic development of the child; developing an overarching identity and respect and ability to participate in a democracy; and finally, for making assessments and exams an integrated component of classrooms.

Table 2: Emphasis on Skills that NCF 2005 recommends should be developed under each discipline

Language	Mathematics	Science	Social Science
Multilingualism	Application to life	Scientific method	Normative responsibility human values
Stories, poems, songs	Representation in a multiple ways	Observation-falsification of theories	Freedom, trust, respect for diversity
Emphasis on creativity	Graphs, modelling situations	Cognitive validity	Cross disciplinary studies
	Relationships		

Expansive in its conception of learning, and sensitive to the reality of social difference that characterises the Indian classroom, the NCF 2005 has made a right step forward in advocating a framework for curriculum that can accommodate different learners' needs, by making learning a situated and participatory process. However translation of its principles within classrooms remains poor, requiring more efforts at teacher reorientation and training, as well as the social reorientation of the value given to education by school and society. With education increasingly being seen as a means to an end (primarily economic), this kind of shift in the system remains a huge challenge for the nation.

1.3 Education in Karnataka and the Innovative approaches

It is against this background that the report attempts to study and evaluate the strengths and limitations of an alternative approach to learning - the Kalikayatna approach - that has been implemented in selected clusters in five districts in Karnataka. While Karnataka is considered one of the educationally advanced states and stands somewhere in the top quintile in terms of inter-state comparisons for most indicators on education, poor learning outcomes remain a serious concern as do urban-rural gaps in literacy. The overall literacy rates in the state have increased from 29.80 % in 1961 to 75.36 in 2011 (the respective national figures are 28.30% in 1961 and 72.99 in 2011; Office of Registrar General and Census Commissioner)[1]. Karnataka had 51,904 primary schools in 2003-2004, this number rose to 59,555 schools in 2011-2012 (DISE 2003, 2012). According to the DISE report 2013-14, the GER (Gross Enrollment ratio) at the primary level is 101.0; this is close to the national figure which is 101.4. The GER for the upper primary level is 91.8, higher than the all India figure of 89.3 (DISE). In Karnataka, the transition rate from primary to upper primary is 94.3, which is relatively high, however this trend has remained constant over all the years from 2006-07 (DISE 2006, 2012). A survey by the Karnataka School

[1] Source: Indiastat http://www.indiastat.com/table/demographics/7/literacy/158/527417/data.aspx
Notes: Literates for the 1961 census relate to population of inhabitants above 5 years, whereas literates for the 2011 census relate to population of inhabitants above 7 years

Quality Assessment and Accreditation Council has also underscored the poor quality of education provided by government schools in the state. The assessment, based on a survey of 1020 schools showed more than half the schools surveyed to have scored a D, the lowest grade (Kulkurni, 2013).

The Karnataka government has introduced several innovative experiments in the field of education, and has been one of the few states that have adopted innovative teaching learning approaches at the state level, taking them beyond small scale pilots. These include programmes such as the Nali Kali, Keli- Kali (the direct to class room broadcasts, listen and learn programme), Shikshanadalli Rangakali (dramatization approach to teaching) and The Quality Learning Programm - Kalikayatna. While some of these like Kalikayatna have remained small, the state has adopted Nali Kali approach for classes one to three for all state-run primary schools. The Nali Kali ('Joyful Learning') approach, has also developed out of the River project, the Rishi Valley rural school programmes in Andhra Pradesh. Started in 1995 by teachers in Mysore district, the Nali Kali strategy adopted creative learning practices to retain children in school and also bring out of school children to school. This sought to transform the class from a passive, one-way communication approach to a participatory and active classroom. Learning is organized around a series of 'learning cards' instead of textbooks, each having a specific learning objective and activities that children could work on in small groups. Teachers were trained to become fun-loving, creative 'facilitators' rather than authority figures within the classroom. The main intention behind the approach has been to reduce the pressure of learning on students, as well as to allow learners to move through the levels at their own pace.

It is against this context that the study attempts to explore what the Kalikayatna approach offers, both vis-à-vis other educational developments and practices that are already underway in the state, as well as with the larger goal of understanding how the approach can cater to addressing some of the problems associated with quality and equity. The report is divided into seven chapters, and structured in the following manner: the second chapter outlines the Kalikayatna approach and the third one details out the methodology and the process of the research. Chapter four analyses the teacher development approach followed by Kalikayatna and Chapter five discusses the learning outcome results. The sixth chapter talks about the parents' involvement in the approach and the last chapter concludes the report with some suggestions.

CHAPTER 2

The Kalikayatna Approach

Kalikayatna is one type of approach to primary education developed jointly by Prajayatna (an NGO, working in the field of education across the four states of Karnataka, Uttar Pradesh, Rajasthan and Telangana .) and SSA, to cater to children coming from diverse backgrounds and largely from illiterate or semi-literate environments. Initiated in 2005, in Hunsur Taluk in Mysore, this model of learning now operates in seven clusters in five districts across the State of Karnataka. The districts included are Ramnagara, Chitradurga, Bellary, Bijapur and Yadgir. Each cluster consists of 18 units: a lower primary school is considered as one unit whereas a higher primary school is considered as two units. Hence each cluster will have around 12 – 15 schools. Kalikayatna has also spread to other states in India in collaboration with other organisations. Prajayatna directly implements Kalikayatna activities in Karnataka and Uttar Pradesh, and provides technical support in the form of orientation and field visits in the other states.

The Kalikayatna approach was developed in response to the low learning levels, low levels of enrolment and high levels of absenteeism experienced in the traditional system of education. The approach arose from working with children who had dropped out of school or were irregular to school, and drew from various other programmes that were conducted to increase retention and interest of children in schools, where it was recognized that the needs of the children within the school were not being met. Therefore, for education to be meaningful, Prajayatna felt that the teaching learning approaches needed to be altered in schools. The Kalikayatna experiment also needs to viewed within the larger context of the role of NGO's in influencing the content and delivery of school curriculum in government primary schools across India.

The approach places greater emphasis on 'how' children learn rather than on 'what' they learn. The objective of this approach is to facilitate the development of learning skills in children and allow them to internalize a concept, based on their abilities, life experiences and surrounding environment. Less importance is placed on the ability of a child to reproduce a certain interpretation of a concept for a particular assessment or evaluation. Integrated learning remains the focus of the approach, and therefore subjects are not divided though all learning objectives are considered.

2.1 Operationalization of the Kalikayatna Approach

A day in a Kalikayatna classroom is typically divided into the following three sessions reflecting three broad strategies / approaches to learning, that together allow for a more holistic understanding and development of concepts. These include:

i. **Whole Group Activity**

In the morning, children are engaged in a facilitator led whole-group activity, which provides a broad, conceptual introduction to a topic. Children form a circle around the facilitator, who usually begins with a song or activity about the particular concept to be discussed. The facilitator then facilitates a discussion about the concept. This is believed to allow the children to develop interest in the topic, internalize and relate the concept to

their own lives. Additionally, associations with other concepts are created. Further, it also allows the facilitator to gain an understanding of where children stand in terms of concept learning,on a daily basis, by observing their participation in the whole group activity. Depending on the creativity of the teacher, various applications of the concept are made to different subjects.

ii. **Learner Group Activity**

After the whole group discussion, the teacher breaks up the class into smaller groups, around 4 to 6 groups each with roughly 5 students. This small group activity is meant to help learners discuss, reflect, re-evaluate and engage with the concept in greater depth, as they listen, work and share their ideas with peers. The groups consist of children with differing abilities and ages. The teacher then sets up different tasks for the children to do. All these tasks address various facets of the topic, and presumably lead to the development of different skills. After the task, each group disseminates their work to the whole class. The learner group activity is expected to encourage the development of social skills such as negotiation, arbitration and collaboration.

iii. **Individual Practice Time**

Towards the end of the day, students are engaged in individual practice, through tasks given to be completed individually. The teacher goes around the classroom to assist students. Students in this session may be given different tasks and the level of difficulty may depend on the child's perceived learning ability by the teacher. The individual practice time allows children to develop skills and accumulate knowledge at their own pace. It also allows the facilitator to provide individual attention to a child.

Apart from the way the day is structured, Kalikayatna has other systems in place which distinguishes it from other schooling processes. Some of the features of this approach are:

i. **Discussion based learning:** Children learn through discussion. The day is structured in such a way that opportunities for discussion and cooperation are inbuilt into the day's activities. Both the whole group and learner group activities, which typically take up more than half a day, provide opportunities for discussion.

ii. **Teacher is a facilitator:** The role of the teacher is that of a facilitator, rather than being the sole repository of knowledge. The primary role of the teacher is to facilitate discussions and to plan the teaching of concepts to take full advantage of the learning opportunities offered by local situations and the environment.

iii. **Classes are vertically integrated:** Proficiency and the ability to acquire certain skill-sets and process concepts vary from one person to another. Therefore, vertical integration of classes across age groups accommodates the strengths and weaknesses of children across the various subjects. Children enrolled in lower primary schools are normally divided into two age groups. The first age group consists of children between 5-8 years. The second group consists of children in the age group 9-10. The NCF also promotes the vertical integration of classes in government schools in rural areas. This approach is believed to allow for the optimal use of the resources.

iv. **Learning "Concepts" rather than "Subjects":** Any activity in life, usually, requires the application of concepts learnt through various subjects. Learning is integrated in the Kalikayatna approach. There is no differentiation of concepts and skills into subjects such

as Mathematics, English and Environmental Science. A certain topic under the state syllabus is explored fully by the teacher and students and in the process acquires various abilities and skills cutting across subjects. Therefore, the curriculum is designed around concepts rather than subjects. Figure 3 is a concept map of the concept "Our Village". Examining the concept map, it is apparent that skills classified under various subjects are brought into the understanding of the concept. A lot of concepts such as community, public property, the meaning of the word settlement, the division of states into administrative units have all been integrated into the concept. Skills under Mathematics such as distance, and English language skills are also acquired when learning and discussing this concept. Kalikayatna as an approach integrates concepts and subjects, domains and curriculum to facilitate a more holistic approach to learning (NCERT).

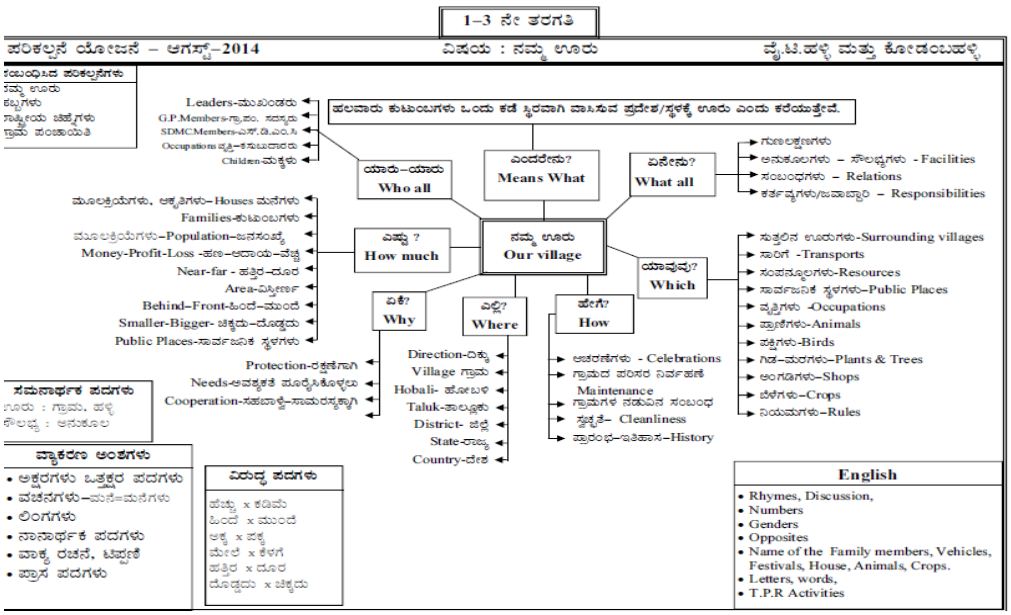


Figure 1: Concept Map, "Our Village"

v. **Teacher Collective Meetings:** Teacher collectives take place once a month and are attended by teachers, the Cluster Resource Person (CRP) and Prajayatna staff members. Teachers discuss what they did over the previous month in the "Sharing Session", ask doubts and discuss ways to teach difficult concepts. During these sessions, concepts to be taught are also decided and mapped, and discussions about learning outcomes and related activities and assessment tools for the month are also undertaken.. Other activities include making of worksheets for better understanding or assessment of the concept. Discussions on new theories or ways of learning, assessment, facilitation etc. are also held during these monthly meetings.

vi. **Going beyond text books and other pre- designed materials:** The teacher uses other materials to teach the class, rather than textbooks. It is felt that the use of textbooks could limit the learning experience of the child. It could also create a sense of alienation when examples and situations in the text book are foreign to a child's situation. However, Kalikayatna practice is not against the use of any learning material, which would heighten the experience of learning of the child. If the teacher feels a certain learning tool could lead to greater assimilation or understanding of a concept he or she is free to use it.

vii. **Regular student assessments:** In the Kalikayatna approach, students are assessed throughout the year using four levels, viz., evolving, involving**,** interested and self-directed, with self- directed being the "best" level. Tools used to grade the students are:

- Ongoing Portfolio- All the work the child does is filed in a folder. This work is then used along with the teacher's observation to fill the child's biannual progress card.
- Reflection Portfolio- The Reflection portfolio contains a selection of work by the student. Usually, a compilation of their best work.
- Weekly Files- The weekly files contain the child's work for that week and are sent to the parent for their feedback.
- Teacher Observation Book- **T**he teacher's observation contains a monthly evaluation of children across different skills. This along with the observation sheet from the ongoing portfolio is used to assess and consolidated in the progress card.
- Progress Card- Both the Ongoing Portfolio and the teachers observations are used to track the child's development across various skills twice a year. The skills considered for Class 3 include all the skills prescribed as per the state curriculum such as writing, simple math skills and shapes. For Class 5, additional concepts like profit, loss and simple interest are considered. The progress card also contains the teachers' observations on other abilities of the child's (which are more cognitive and social, in nature) such as problem solving, listening, observation, data collecting, working in a group, analytic skills etc, the child's interest in sports, arts, theatre and behavioral attributes. The Kalikayatna approach would like assessments to be collaborative process in which the students, parents and teachers are involved. The assessments should reflect the ability of a child to apply and synthesize knowledge, and more importantly be understood by the child.

The differences between the mainstream, which in this case implies Nali-Kali (or regular text-book driven state schooling in the case of Std. 5) and the Kalikayatna approaches, are summarized in the Table 2.

Table 3: Differences and Similarities between the KY and NK/regular state schooling Approach

Feature	Kalikayatna	Nali-Kali/state schooling
Role of Activities	Activities are incorporated within the teaching of concepts. There appears to be **no predetermined number of activities that need to be covered**. The beginning of each class usually begins with a song or a dance, however, not mandatory.	**In NK there are predetermined numbers of activities** or songs or dances that are taught to the children. All children that go through the approach, learn these songs. The morning begins with a song. For higher grades (that don't have NK) role of activities is minimal.

Flexibility in teaching	The teacher has a list of concepts he or she needs to cover in an academic year. However, **the teacher has the flexibility in deciding when he or she teaches a certain concept**. Therefore, the teacher can relate the concept to the surrounding environment or situation.	In NK, t**here is an amount of predetermined material the child has to go through.** The teacher has to ensure this. The child, however, can learn at his or her own pace. Therefore, the approach is highly tool dependent. In higher classes, while the syllabus ispre-determined, the flexibility in pace of learning offered by NK is also absent.
Vertical integration	Standards up to **Class 5 are vertically integrated**. Standard 1-3 is one group and standards 4-5 are one group	Classes up to class 3 are vertically integrated. **Classes 4 and 5 are separate** and follow the text book approach.
Breakup of the day	The day is divided into whole group, learner group and individual practice time	The day is divided into subject-wise periods, such as language, Mathematics and EVS.
Room for discussion	Both the whole group activity and the group activity provide avenue for discussion and cooperation. However, depending on the teacher, an individual child can get overlooked.	Group activity is not an essential feature of this approach even though children belonging to the same level usually sit in one group. In higher grades the room for discussion is minimal.
Dependence on the teacher	**Highly dependent** on the teacher	**Not so dependent** on the abilities of the teacher. Cards and materials play a major role, and to that extent, NK is material dependent, while higher classes are text-book dependent
Flexibility in syllabus	More flexibility in organizing the order and competency	Not much flexibility
Use of teaching materials	Depends on the teacher	Certain set criteria need to be followed.
Syllabus	Syllabus broken into concepts	Syllabus broken into milestones or activities.
Catering to the particular learning abilities of a child	Individual practice time	In the NK approach study material caters to a particular child, and the child can study these portions whenever she or he wants; while in higher classes the tasks set are uniform

Revision	A child gets re-exposed to a topic each year she or he is in that particular learner group.	The child is not allowed to proceed, unless he or she completes certain tasks.
Parental engagement	Does not appear to be specific guidelines for active engagement.	Does not appear to have any specific guidelines for active engagement.

The Kalikayatna approach attempts to provide a holistic and meaningful education to children; to increase the inherent ability of children to learn and apply concepts and make sense of the world around them, taking into account their socio- economic background. This is achieved through classroom, curriculum and assessment practices that support an education that is grounded in a child's context.

CHAPTER 3

Research Design

This evaluation of the Kalikayatna approach by the Centre for Budget and Policy Studies (CBPS) seeks to answer the following research questions that were agreed upon jointly with the Kalikayatna team:

1. What is the difference, if any, between the learning outcome in terms of understanding and skill levels and the nature of learning between schools following the Nali- Kali and Kalikayatna approaches?
2. How do the assessment practices of the approach track the learning movement of a learner during engagement in learning tasks?
3. What is the process of teacher empowerment? How does the approach help the teacher as a facilitator?
4. What is the parents' participation in the learning process of the child? What is their perception of the approach?
5. How does the approach enable the implementation of the principles and the mission of the National Curriculum Framework (NCF) and the Right to Education (RTE) Act? As a system does the Kalikayatna approach enable the implementation of the learning principles through restructuring of the learning experiences/ opportunities in order to enhance the abilities in the child?

While both Kalikayatna and Nali-Kali are clearly not focused on learning outcomes alone, and focus on overall development of the child, learning levels provide an easily applicable frame for a comparative analysis, and was therefore included as an important research question. This was also used as a tool because of the greater acceptability of learning outcome as a measurement of quality. A mix of methods and tools was employed to answer the above questions. The entire evaluation study was completed in four months and therefore the choice of the research design was also constrained by the short period in which the entire exercise had to be planned and implemented. The methods and tools used are described in greater detail in the paragraphs that follow.

A. Literature Review

The review consisted of a compilation of literature on the evolution and development of pedagogical methods and approaches in primary education. The objective was to provide a contextual and institutional framework for initiatives currently prevalent in primary education in Karnataka; including the Kalikayatna and Nali-Kali initiatives. It also helped in designing appropriate tools.

B. Desk review of Kalikayatna materials and reports

Documents and records maintained by Prajayatna can be classified into child, teacher and programme related materials. These data provided the primary information necessary to understand the functioning of, and enable the comparison of, Kalikayatna to other approaches in primary education. A description of some of the materials available that were used:

Table 4: Programme Records

STUDENT RELATED MATERIAL	TEACHER RELATED MATERIAL	PROGRAMME RELATED MATERIAL
Ongoing Student Portfolios- files containing children's work	Teacher assesment reports	Kalikayatna concept notes
Progress cards	Video clips on teacher cluster meetings	News letters
Records of parent and peer feedback	Concept notes and records documenting teacher cluster meetings	Impact studies conducted by NCERT and DIET
Consolidated student data from 2008 to 2014		Video clips on the classroom process

C. Children's Learning Assessment

Three kinds of exercises were done with students: this included two individual – one written test and one oral test, and one group activity. To create the paper based, one on one tests and group activities, initially a desk review of the Class 3 and Class 5 textbooks, and material provided by Prajayatna was undertaken. Students in Class 3 and Class 5 were tested. The selection of these classes was based on the exposure of children both to the approach and their ability to write paper based tests.

This review helped establish the key areas and skills to include in the assessment. The questions were mainly designed to test the abilities that the Kalikayatna approach wanted to inculcate in a child. The competency of the approach to address a particular skill will be addressed in the analysis of the randomly selected ongoing portfolios. Group activities were designed to examine the cooperative behavior of the students under various situations and also to test their ability to creativity and cooperation as a group.

The questions in the paper based tests could broadly be classified as tests of Language, Mathematics, EVS and Science knowledge and skills. Therefore a question might not address a particular skill, rather it be would addressing the understanding and learning abilities of a child.

The one on one tests consisted of reading tests of both English and Kannada passages and a Kannada comprehension passage. In addition, the one on one tests for Class 3 children consisted of questions that tested their ability to identify pictures. USAID's *Early Grade Reading Assessment* tool was employed to design the questions, asked after a comprehension passage. These questions progressed from questions that tested the ability of the listener to recall details mentioned in the passage, to questions that tested their application of these details. Group activities were designed to examine the cooperative behavior among students under various situations and also to test their ability to undertake and complete a task as a group.

A pilot of all three sets of tools was conducted at a primary school in Bangalore. The tools were piloted in the Kannada medium section of the school. The pilot sample consisted of 10 students in Class 3 and 20 students in Class 5. This school was considered as it followed neither the Nali- Kali nor the Kalikayatna approach and also offered an opportunity to pilot the tools in Kannada. It was not possible for us to include all students in the piloting of reading and listening tools. The pilot revealed formatting issues in

the paper- based tests and timing issues. Employing feedback from the student performance and teacher's feedback the tools were revised. Feedback on the Kannada version was also obtained from Kannada teachers teaching in government schools. The revised tools were then shared with one known pedagogy expert for review, and the feedback further helped in finalizing the tools.

The results from these tests have been used to comment on the learning levels, both from the Kalikayatna's own perspective, and in a comparison to Nali-Kali/regular text-book oriented state board schooling approach (for class 5). The same tools were employed in both Kalikayatna and Nali-Kali schools, as the main objectives remain the same. While the results from the individual tools have been quantified and analysed using statistical applications, the results of the group activities have not been quantified. However, the observations from the group activities have been used for arriving at inferences on certain specific competencies

D. Classroom Observation

In general, two classrooms were observed in every school that was visited. Classroom Observation was included as a method in order to understand the approaches better, and to compare the classroom processes as against the stated concept of the respective approaches.

E. Teachers' Interview

At least two teachers were interviewed in every school visited. Teachers interviews was conducted with a purpose of understanding their perspectives on teaching-learning approaches, their feedback on implementation of these approaches, and to assess the impact of teacher empowerment and support practices.

F. Group Discussion with Parents

Where ever possible, group discussions were held with parents in order to determine and understand what they felt about the Kalkayatana approach.

G. Facility Survey

A facility survey of schools had been conducted to ensure that the socio-economic profile of the schools in the Kalikayatna and the Nali- Kali clusters were similar. The facilities examined included library, toilet, Mid-Day Meal Scheme, availability of text books, etc.

Table 5- Methods, Tools and Sample size covered

District (2)	District 1 (Ramnagara)		District 2 (Bellary)	
Approach (2)	Kalikayatna	Nali-Kali/State Board	Kalikayatna	Nali- Kali/ State Board
Clusters (5)	YT Halli and Kodambahalli	Singarajipura	Gajapura	Chirabi
Schools (20)	GHPS YT Halli GLPS Jagadapura GHPS Virupakshipura GLPS Karalahalli GLPS Kallupura	GHPS Virupsandra GLPS P Hallidoddi GLPS Byreshetnahalli GHPS Vidyasandra GLPS Haniyuru	GHPS Doddagolahatti GHPS Kandhegalu GHPS Badaladaku GHPS Bathanahalli GHPS Eechilbommanahalli	GHPS Gangamanahalli GHPS Rampura GLPS Agarahara GHPS Chirabi GHPS Palayankote
Facility Survey (20)	5 schools	5 schools	5 schools	5 schools
Teachers Interview (41)	10 teachers	10 teachers	10 teachers	11 teachers
Students III (244)	49 students	42 students	80 students	73 students
Students V (251)	53 students	48 students	81 students	69 students
Class room observations (41)	5 class III teachers 5 class V teachers	5 class III teachers 5 class V teachers	5 class III teachers 5 class V teachers	5 class III teachers 6 class V teachers

Sample Size

It is clear that the first two were desk based activities while the remaining were field based activities. Field work was carried out in two of the five districts where Kalikayatna is operational. The choice of the districts was based on both geographical variation as well as considerations such as the duration since the establishment of the programme in the district, and the availability of children and teachers who had been exposed the approach. Kalikayatna operates in three clusters in these areas. We chose to conduct the evaluation in the Gajapura cluster in Bellary district and YT Halli and Kodambhalli clusters in Ramanagra district. To contrast and compare the Kalikayatna approach to the Nali-Kali approach, same number of schools in other two clusters were studied in both the districts. The field work team comprised of personnel well-versed with Kannada.

CHAPTER 4

Classroom, Teacher and Teacher Empowerment

Educational transaction has to shift from the benefactor (teacher) and the beneficiary (pupil) to a motivator and facilitator and learner, all of whom have rights and responsibilities in ensuring that educational transaction takes place.

- **National Curriculum Framework, 2005**

4.1 Classroom Process and the Role of Teachers

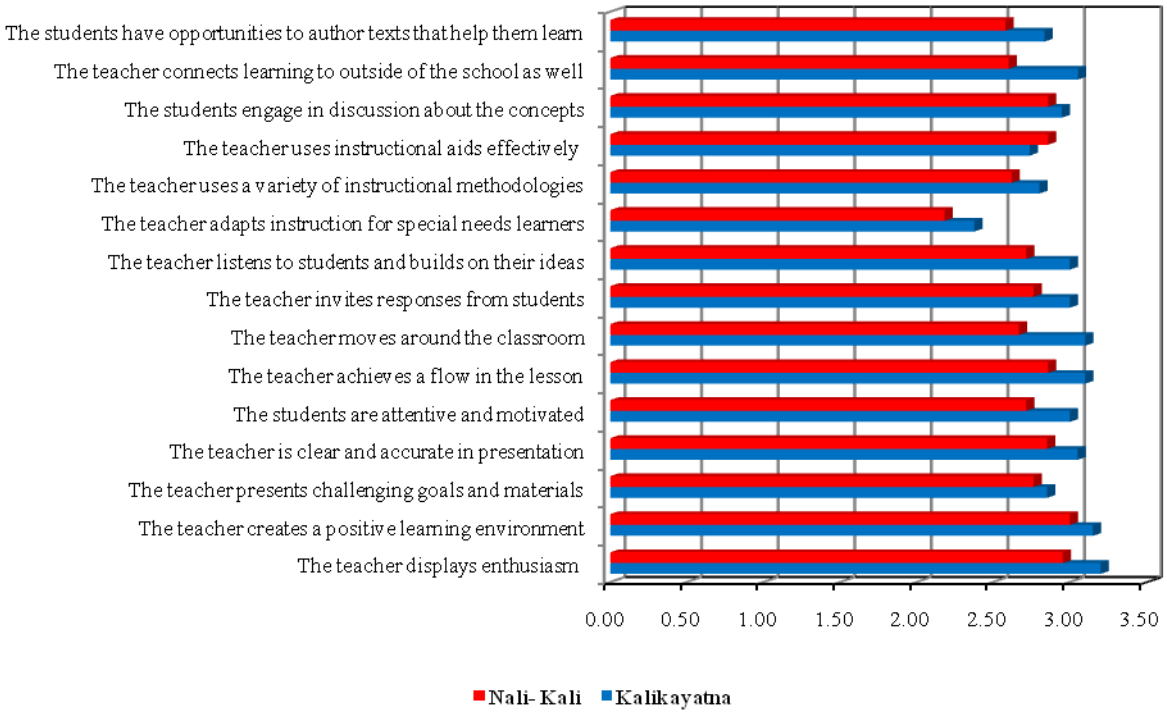
We begin with a discussion of the Kalikayatna approach to learning with a description of the classroom, teachers and teacher empowerment as teachers form the core element in translating the vision of the approach on field, and also because understanding these processes will help us analyse the learning outcome results in a more nuanced manner later.

It has been envisaged in the NCF 2005 that the role of the teacher should gradually shift from that of an instructor to a facilitator and a companion. Teachers are encouraged to make learning more joyful, fun and interactive. Learning is not just supposed to take place inside a classroom, but also outside, where teachers are expected to give students real life lessons and examples of concepts they might learn inside the class and from textbooks. Furthermore, teachers should foster children's creative capabilities and allow them to think and question. An advantage of making classroom processes more interactive is that it enables children to communicate more freely and eliminates frightfulness. Reliance on traditional teaching- learning interactions tends to result in a lack of enthusiasm among the students and teachers, differing levels of learning and student discomfort (Blum, 2009). Teachers are also expected to assist students in getting out of their comfort zones, gain confidence and avoid the use of threatening language or physical abuse (NCERT, 2005).

Classroom and teaching processes observed as part of this study in order to understand the Kalikayatna and the Nali- Kali school approaches were examined using the frame discussed above. We observed the teaching processes for Classes 3 and 5, for both types of approaches. Teachers were graded on using a 15-item observation checklist, using a Likert Scale ranging from "*Strongly Agree*" to "*Strongly Disagree*". The scores of the teachers were then averaged and a comparison was made. A score of 4 points was given to "*Strongly Agree*", "*Agree*" was given 3 points, 2 points for "*Disagree*" and 1 point for "*Strongly Disagree*".

An analysis of the combined scores for both classes 3 and 5 is presented below. An important rider here before presenting the observations is that all teachers were aware of the presence of the 'outsider' as this was part of a two-day exercise, and hence can safely assumed to have been (i) a little conscious (or, in some cases, even a little nervous) and (ii) making an extra effort to do 'well' going by their own understanding of what is desired teaching-learning process. This means that though these observations may not be exactly the same as an average, everyday classroom, these are still representative of teachers' understanding, potential and capacities.

Figure 2: Graph of KY vs NK class observations



Source: CBPS fieldwork using USAID's Early Grade Toolkit

An important finding that emerges is that the mean scores of the Kalikayatna teachers were higher than the Nali- Kali teachers in all but one criterion. The differnces are high for aspects such as 'the teacher connects learning to outside of the school' and 'the teacher moves around in the classroom'. However, none of these differences were significant. The average scores for most of the elements vary between 2.5 and 3.00 on a 4 point scale; this is true for both Kalikayatna and the other schools.

One particular item where both the approaches seemed to have failed related to children with special needs: the average score is below 2.5 for both the approaches. Attachment Table 1 showing the distribution of these scores reveals that there is not much difference even in the spread; most classes for both the approaches fall in the 'agree' category.

The classrooms in Kalikayatna schools depicted greater diversity in terms of the range of topics being used to teach a particular concept or the methods that the teacher had selected to transact. In many cases, these classes were examples of active and engaged classrooms even without the use of external aids. Teacher's enthusiasm, motivation and active interaction with students were all integral characteristics in these classrooms. A teacher dancing along with Class 1 to 3 students while singing a song about addition and another being very patient with students while asking questions were examples of how teachers were enforcing a positive atmosphere within the classroom in Kalikayatna schools.

Classroom Observations: Some examples

1. *In Bellary, a class 3 Kalikayatna teacher sang loudly a song about addition, dancing with the students in the process. Further, the teacher went on to dedicate an entire day to mathematics. Each student came up to the blackboard, wrote a number and then was required to break the number down into individual place values:*

22,344 = 22000 + 300 + 40 + 4

In this way, every student in the class seemed attentive and were, in fact, waiting for their chance solve a problem they would give themselves! They were indeed engaged and enjoying themselves.

2. *In a Kalikayatna school in Bellary, the class V teacher taught concepts regarding cash crops, food crops, living and non- living things by asking questions related to what students grew in their farms. The teacher actively made an attempt to teach what the children were exposed to and as such, the students were deeply involved.*

3. *In a Kalikayatna school in Bellary, students were seen having regular quarrels within the class. Other students in the same class were seen not making an effort to engage in class and would much rather remain quiet. The teacher was seated in the class, not moving around much. The day's lesson started with vehicles, their classification and suddenly shifted to number counting and word formations. Children found it difficult to relate to these shifts.*

When asked what they felt the biggest strengths of the Kalikayatna process were, most teachers felt that it eliminated the feeling of fear among students and that they have become more confident. Other teachers felt that the activity based learning of the process was the biggest strength. Few teachers also felt that it has enhanced the child's communication skills and their questioning ability.

The Nali- Kali teachers scored marginally better than the Kalikayatna teachers in terms of using various instructional aids. This is perhaps reflective of the tool-oriented approach of the Nali Kali learning philosophy, and consequently the emphasis that may have been placed during training on the use of tools. A Nali- Kali teacher from Ramnagara was utilizing calendars to help students with the months of the year, days in each month as well as the concept of Sundays and public holidays. Another teacher from the Nali-Kali process helped students understand a story through drama, making them enact what they had read and asking them questions about what they did. The NCF emphasizes the need for teaching aids to be used primarily because it makes school interesting for children, and in that Nali Kali seemed to perform better than Kalikayatna teachers. However, while the Nali- Kali schools too had an activity based learning programme, the classroom observations suggest that that the songs and dances were not necessarily part of their lesson plans. Other studies have also similarly made note of this ambivalent use of the activity-based approach within Nali Kali. For example, Sriprakash (2009, p.638), based on her study of Nali-Kali notes that "Teachers drew on the Nali Kali rhetoric in terms of the affective needs of children, however the child-centred approach to 'activities' appeared to have an ambivalent relationship to 'learning' (the acquisition of the syllabus). The controls on the selection, sequence, and evaluation of knowledge,

seemed to be maintained despite the pull towards an 'invisible pedagogy' suggested by an activity-based approach. Strong controls over pedagogic transmission were embedded in teachers' constructions of the rural child as a passive learner."

In this regard, the Kalikayatna approach did look more cohesive in terms of lesson taught. With no fixed lesson plan, Kalikayatna teachers were able to integrate various lessons and subjects from mathematics to hygiene into a day's curriculum through songs, cards and various other activities. However, this is not to say that all classroom in the Kalikayatna schools were similarly active and engaging; this is particularly true for class V where the teachers seemed to struggle to teach the higher level concepts using the discussion mode.

In terms of student participation, a teacher pointed out that "*students who participate more get more attention and therefore learn better. Children who do not participate much on their own receive less attention and therefore tend to be left behind*". In the learner group approach followed by Kalikayatna, children of mixed abilities are grouped together and they work on a given task under a leader chosen from among the students. As is clear from the above observations, while other children take ownership for the task set out by the teacher certain children remain distracted and neither the group leader nor teacher was observed to intervene. The group leaders and groups are supposed to be rotating frequently so as every child gets an opportunity to lead but again the observations suggest that this does not always happen as frequently.

4.2 Teacher Empowerment

Freedom to plan a curriculum is an integral part of primary education. NCF highlights the fact that curriculum planning must be increasingly decentralized. The Kalikayatna process does seem to adhere to these recommendations. When the teachers were asked how flexible they thought the process was, every Kalikayatna teacher interviewed said it was either 'Very Flexible' or 'Flexible' while not all Nali- Kali teachers felt the same. This is perhaps also reflective of the more hierarchical, and pre-planned, objectives-based approach of the Nali Kali programme (despite its emphasis on activity-based and experiential learning approach), as opposed to the Kalikayatna approach that provides more flexibility due to its emphasis on processes rather than outcomes.

Teacher collectives in Kalikayatna meet once a month and when asked what they felt about the collectives, teachers were unanimous in saying it was useful to them. Taking place over an entire day, collectives are meetings where teachers can discuss freely and ask doubts. The first session, known as the "Sharing Session" begins with teachers telling each other what they have done over the previous month. They use this opportunity to showcase their students' work and provide feedback. The next few sessions are used in mapping the concepts and lesson plans for the students or designing workbooks for the students. Overall, the collective observed was largely beneficial to the teachers for they receive feedback on their work and also design curriculum for the students.

> *"Investing time for teachers to jointly plan lessons with their colleagues can raise the quality of instruction because lesson plans are produced through careful consideration by a team of experts who each bring varying, and often complimentary, skills and experience to the process"*
>
> - **Time for Teachers, *Leveraging Expanded Time To Strengthen Instruction and Empower Teachers* (2014)**

While various talking points did emerge during our field work, one in particular was worth highlighting upon. There certainly seemed to be a feeling that Kalikayatna was trying to institute a culture of learning. It is a well-known fact that education is an evolving process, and focussing solely on learning outcomes and fixed lesson plans are unlikely to succeed. Integral to the whole Kalikayatna process is for teachers to understand and evolve their process of teaching – learning by allowing them to transmit what they perceive to be important. However, what might be of relevance to improve teachers' capacities maybe an investment in building teachers' pedagogic content knowledge (Shulman, 1986), which is different from both content knowledge (e.g., knowledge of physics) and pedagogical knowledge (e.g., how to use teaching-learning material, how to engage students in experiential learning, etc.). According to Shulman (1986) pedagogic content knowledge refers to "teachers' interpretations and transformations of subject-matter knowledge in the context of facilitating student learning" (Solis, 2009), in a manner that makes the content more easily relatable and understandable to the child, according to his/her age group and cognitive level. This is particularly important as all subjects cannot be taught in the same manner, and more so to all age groups of children. A focus on pedagogical content knowledge can thus perhaps also overcome the difficulties that Kalikayatna teachers face at higher grades (in classes 4 and 5 as noted above) since this requires specialized knowledge of how this age-appropriate content can be translated within the classroom.

The Nali- Kali collective meeting, also known as the *Samalochane Sabha*, brings teachers from various schools to have a discussion. In the meeting CBPS attended, it was found that discussions were largely concerned with administrative issues rather than curriculum development. However, teachers were also taught a sample lesson on 'Plant Reproduction' by an external teacher. Like the Kalikayatna collectives, teachers still had the opportunity to discuss doubts and learn how to teach more difficult topics.

Teacher empowerment must be seen as a process of building a collective knowledge base and community to support each other. Peer to peer learning and interaction goes a long way in achieving these goals. The collective meeting attended by CBPS encouraged meaningful interactions amongst peers, while the same could not be said concussively about the Nali Kali teachers' collective, which was perceived to be a bit more top – down in its approach. Instituting a culture of learning amongst teachers can certainly be replicated at the student level- in contrast; structured learning that Nali- Kali teachers engaged in gets repeated in their practice of teaching and learning.

Providing teachers with feedback on their teaching is as important as assessing students in a schooling system. Studies have shown increase in student performances through continuous teacher feedback and observations (Coe, Aloisi, Higgins, & Major, 2014). When interviewed, most Kalikayatna teachers where happy they were receiving feedback once a month. This may be through the Cluster Resource Person (CRP) or the Prajayatna staff members. However, one teacher working in Kalikayatna schools did

mention that he had never received feedback and another said that she would appreciate feedback more regularly. Further, not many teachers working in Kalikayatna schools were aware of the formal assessment system used by Prajayatna to grade teachers.

The sample of Kalikayatna teachers interviewed were also divided into those teachers who had less than, and those who had more than five years of experience of teaching in the Kalikayatna schools. This analysis aimed at understanding the change in teachers' attitude once they had been exposed to the approach for a certain amount of time. A proportion of teachers with less than five years' experience, preferred the Nali- Kali way of teaching. However, there was greater ambivalence on the preferred approach among teachers who had taught the Kalikayatna approach for more than five years. Larger proportion of teachers felt that the Kalikayatna approach was flexible, more efficient, and that grades were better than marks. However, a few also felt that workload was heavy. This is perhaps suggestive of the need to give a longer incubation and induction period for the programme. With the mainstream, formal system of education largely geared towards instruction-based, Tylerian approach to education (wherein the predominant goals are that of reaching or completing specific tasks within given time periods), the Kalikayatna approach that focuses on processes, perhaps requires more time to be understood by teachers, students and the community.

When asked what they felt were the drawbacks of Kalikayatna were, teachers who had less than five years of experience felt that the lack of textbooks and insufficient writing practice were possible drawbacks. However, teachers with greater experience felt that approach was not suitable for classes 4 and 5. This is an important observation, since despite the pedagogic shift that maybe emphasized within the Kalikayatna approach, its placement within the mainstream, formal education system makes it necessary for it to cater to the requirements of the formal education system, within which reading and writing are central objectives (rather than processes), evaluated and measured against fixed norms. Further, a few teachers opined that their work load was heavy. Some experienced teachers also felt that it was becoming difficult to provide individual attention to the children. In this context, what perhaps requires greater attention is teacher and parent empowerment that is structured differently so that these important stakeholders in the process are also brought to question the dominant methods of teaching and learning. Crucial to this would be adequate departmental support and participation, wherein even the CRPs and other education officers in charge of training and monitoring share a similar understanding of the teaching-learning process and adequately support the teachers in making the shift from the mainstream understanding of rote learning to a process-oriented, conceptual learning practice.

4.3 Textbook or no textbook?

The two most popular responses, when asked what the biggest drawback of the process is, were a lack text books and the fact that students lack writing skills. A teacher even went on to say that he bought text books to teach the students. Another teacher mentioned that while Kalikayatna was very good up to Class 3 level, it is very difficult for teachers to teach Class 5 students because there were a lot of concepts. Teachers were also asked what their suggestions were to improve the system. Most teachers felt that they needed text books. Few felt that students need exams and one teacher commented that they needed more training before beginning the program. Again, this is perhaps a reflection of the dominant understanding of the education system as outcomes-based. The Kalikayatna team may also have to examine this further, in terms of its philosophy and how this relates to or finds space within the dominant framework of education.

CHAPTER 5

Learning Outcomes: What children can and what they cannot

We have organized the analysis of learning outcomes for both classes III and V across nine sets of abilities / competencies / elements. These include:

1. Reading- Kannada
2. Reading- English
3. Listening
4. Writing
5. Ability to Identify and Differentiate
6. Ability to Apply
7. Ability to Analyse and Examine
8. Mathematics
9. Collaborative Learning

We have used the distribution of scores rather than using just the means, and we have undertaken the specific item analysis to gauge the level of learning across specific ability or competency. We have also undertaken proportion test[2] for all these analyses. This helps us understand the distribution of children's scores.

5.1 Learning Levels- Class 3

Reading- Kannada

Students were asked to read a passage in Kannada as slowly and clearly as they could. Students were scored based on reading fluency, punctuation and intonations. The passage was carefully selected to suit the grade III level.

In general, students in Kalikayatna schools can be interpreted as having better Kannada reading abilities as compared to other schools. While the proportion of students who could read fluently were almost similar at little above that one third of total (either with correct or incorrect intonation and punctuation), the proportion of students who could managed to eventually read despite initially struggling was much higher (39%) for the Kalikayatna schools as compared to others where majority (44.55%) were only able to identify letters and alphabets.

[2] The difference in proportions test is carried out to test if proportion from one population i)is not equal to ii) greater than or finally iii) less than, the proportion from a second population. The three alternate hypothesis associated with the three situations are i)$H_a: p_1 \neq p_2, ii)\ H_a: p_1 > p_2$ and $ii)\ H_a: p_1 < p_2$. Consequently, the three null hypothesis associated with the situations are $H_a: p_1 = p_2, ii)\ H_a: p_1 \leq p_2$ and $ii)\ H_a: p_1 \geq p_2$. The test statistic follows the standard normal distribution.
Source; Stattrek http://stattrek.com/hypothesis-test/difference-in-proportions.aspx?tutorial=apk

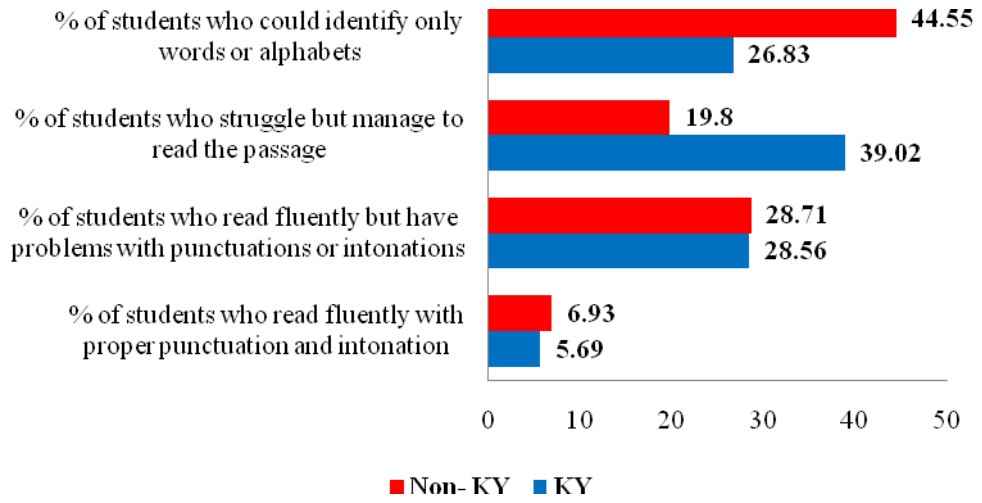


Figure 3: Reading (Kannada) for Class III

Percentage of children	Alternate Hypothesis- P values		
	NK<KY	NK ≠KY	NK>KY
% of students who could identify only words or alphabets	0.998	0.01	0.00
% of students who struggle but manage to read the passage	0.00	0.00	1
% of students who read fluently but have problems with punctuation or intonation	0.51	0.98	0.49
% of students who read fluently with proper punctuation and intonation	0.97	0.06	0.03

Table 6- P Values for Kannada reading (Class III)

The proportion test confirms that a significantly larger percentage of the students in schools following Nali- Kali approach could only identify only words or alphabets whereas a larger percentage of students in schools implementing the Kalikayatna approach struggled but managed to read the passage. Understanding these results perhaps need a further examination of how this has been fostered. While Kannada maybe the mother tongue or home language for most children assessed in the study, it is important to bear in mind that the literate culture requires many other tools and cognitive preparation when compared to the oral culture. Therefore, spoken language may not easily translate into written language skills. Thus, it would be important to analyse how reading skills are being fostered within the two approaches, and whether efforts to make reading contextual/ organic, or to cultivate reading through bridge material is being made.

Reading- English

As in the case of Kannada reading, students were asked to read a passage in English as slowly and clearly as they could, and they were scored based on reading fluency, punctuation and intonations.

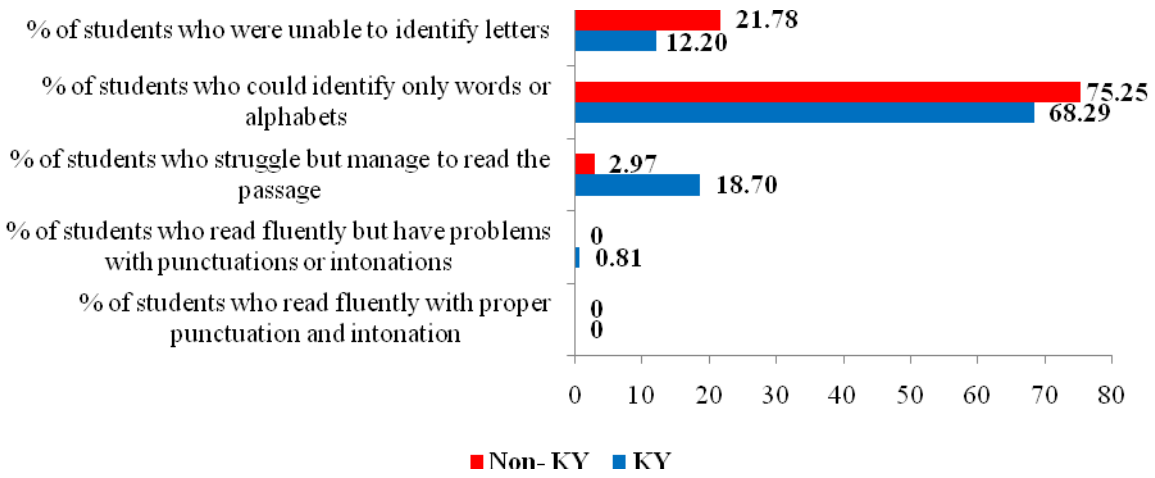


Figure 4- Reading (English) for Class III

Though the passage given was simple for the age-grade association, most children could only identify the alphabets or at most words, irrespective of the approach. Almost no student was able to read the passage fluently. However, a greater proportion of Kalikayatna students were able to read the passage even though they struggled slightly. Similarly, the proportion of students who could not even identify the letters was less for those in Kalikayatna implementing schools.

	Alternate Hypothesis- P values		
	NK<KY	NK ≠KY	NK>KY
% of students who were unable to identify letters	0.9726	0.0547	0.0274
% of students who could identify only words or alphabets	0.8744	0.2512	0.1256
% of students who struggle but manage to read the passage	0.0001	0.0003	0.999
% of students who read fluently but have problems with punctuation or intonation	0.0017	0.0034	0.9983

Table7- P Values for English reading (Class III)

The application of the proportion test showed that a statistically significantly large proportion of students in other schools as compared to Kalikayatna students were unable to identify letters. Similarly, statistically significant larger proportions of Kalikayatna students, when compared to the rest performed better in terms of reading the passage though with difficulty.

Taking the performance on reading as a whole, it appears that a further evaluation in terms of how reading skills are fostered is required. For example, a question that seems relevant here is whether different approaches to reading such as the phonics approach or the whole word approach may affect

the acquisition of reading skills, and whether there are perhaps these differences in teaching strategies within the Kalikayatna and Nali Kali programmes. The phonics based approach teaches children to decode spellings and words by breaking language into smaller, simpler units, such as phonemes. The whole-word approach assumes that language is intrinsically meaningful, and thus, children learn to read best contextually, recognising whole words in relation to other words and sentences. These differences become particularly salient to the teaching of languages such as English that do not have an explicitly phonetic structures. While in this evaluation it has not been possible to observe and identify the specific approaches to language development, and specifically to develop reading skills, that is undertaken within these two programmes, results such as more children in the Kalikayatna approach being able to struggle and read a passage can perhaps be explained through closer observation of classroom teaching practices in relation to language development. The fact that these differences get evened out on reaching a stage where children are able to read fluently (with both approaches showing a similar proportion of children who could undertake this), could be suggestive of many things: for example, that perhaps the approach to reading does not perhaps matter for more proficient readers; or that with repeated practice, both approaches can lead to similar results; or that the identification of appropriate reading strategies is perhaps most crucial at the early stages of acquisition of the reading skill.

Listening

To assess listening skills, students were individually read a small passage by the field personnel. The passages were read once, slowly and based on the passage students were asked six questions.

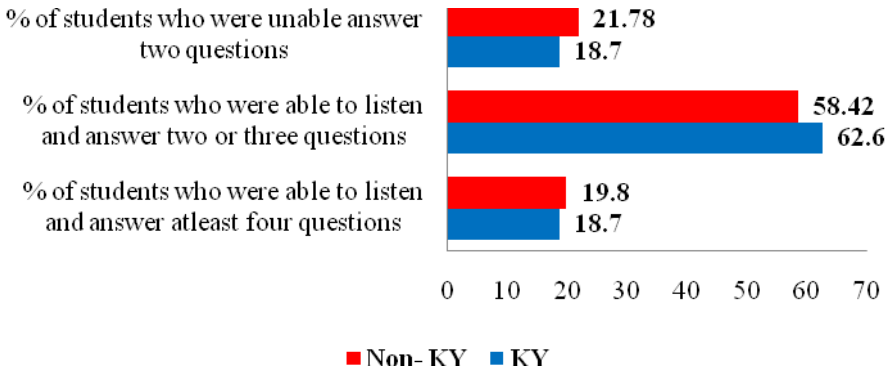


Figure 5- Listening skills for Class III

18.7% and 19.8% of the Kalikayatna and Nali- Kali students respectively were able to listen and answer at least four questions correctly. Furthermore, proportions of the students who were able to answer three or two questions were slightly higher among the students of the Kalikayatna system. Overall, in terms of listening skills, the students of both the systems seemed to have similar competency levels. There are no significant differences in the proportions of children from both approaches in the various categories. The proportions test reinforces the conclusion that the distribution of listening abilities is the same across both approaches.

	Alternate Hypothesis- P values		
	NK<KY	NK ≠KY	NK>KY
% of students who were unable to answer two questions	0.72	0.57	0.28
% of students who were able to listen and answer two or three questions	0.26	0.52	0.74
% of students who were able to answer at least four questions	0.58	0.83	0.41

Table 8- P Values for listening skills (Class III)

Writing

To assess writing skills, students were asked to write about what they would like to do when they grow up. Students were scored on a ten point scale based on writing relevant to the topic, sentence formation and clarity.

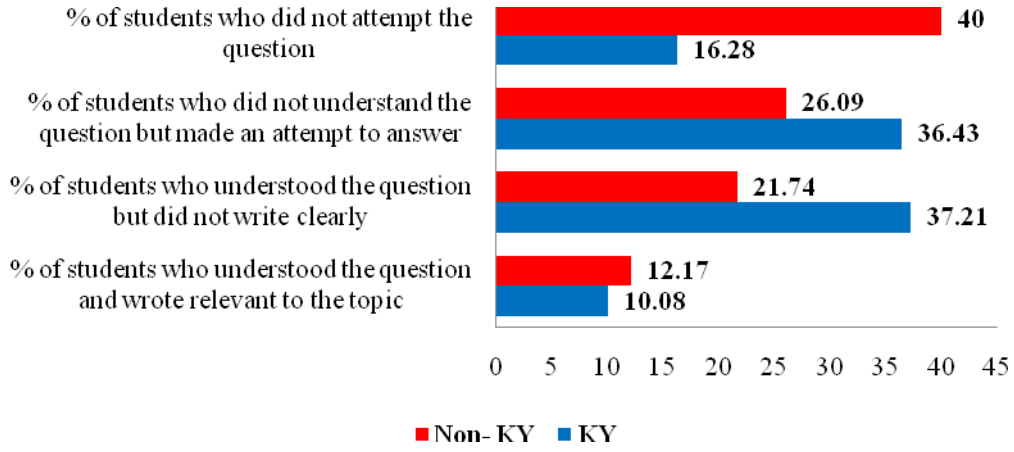


Figure 6- Writing skills for Class III

Only a small proportion of students understood the question and wrote relevant to the topic, the percentage being roughly the same for both the approaches. However, a large number (40%) of students in schools implementing Nali- Kali did not attempt the question while only 16.28% of the students in schools implementing Kalikayatna omitted the question. A much bigger percentage of students in the Kalikayatna were deemed to have understood the question and were able to write relevantly while only a small proportion of students in the other approach were able to do the same.

	Alternate hypothesis- P values		
	NK<KY	NK ≠KY	NK>KY
% of students who did not attempt the question	1	0	0
% of students who did not understand the question but made an attempt to answer	0.04	0.082	0.96
% of students who understood the question but did not answer clearly	0.00	0.01	1
% of students who understood the question and wrote relevant to the topic	0.70	0.60	0.30

Table 9- P Values for writing skills (Class III)

The proportion test results showed that a significantly larger proportion of students in Kalikayatna both understood the question and answered the question. However, there was not a statistically significant difference in the proportion of students who understood the question and wrote relevant to the topic. Nali- Kali students displayed a more extreme performance compared to the Kalikayatna students. A larger percentage of Kalikayatna students were able to write something. Since this task required two sets of skills - reading comprehension and writing, the result is perhaps reflective of more Kalikayatna students at least having one of the skills (comprehension), while a larger proportion of students in the Nali Kali approach perhaps did not have both. Further, the extreme intra-group difference may also be suggestive perhaps of large gaps within classroom learning, wherein students who perhaps had additional support to master written language skills, or had a better aptitude for language, had performed better on the test compared to others. However, these observations require further extensive classroom observations to be validated.

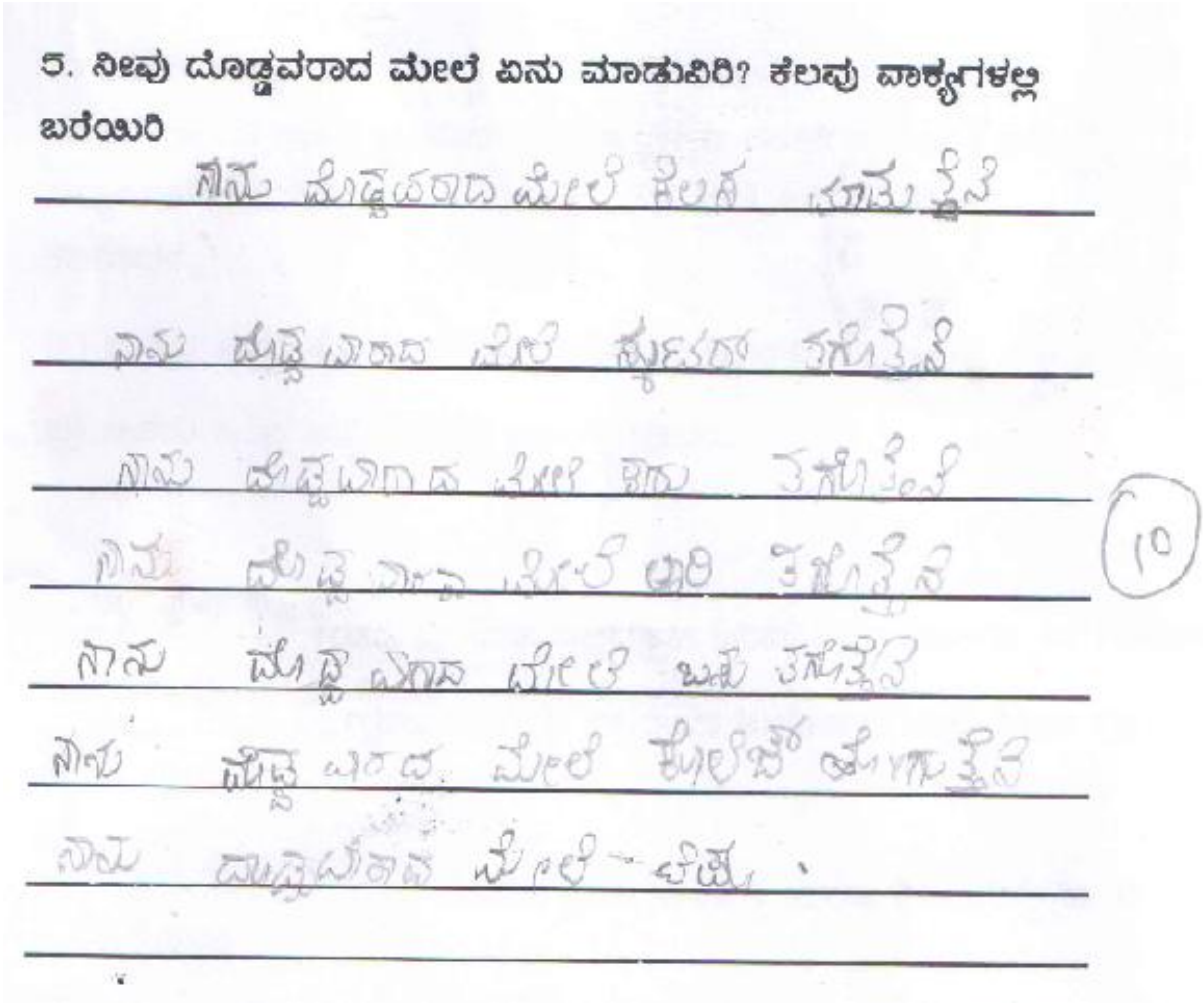


Figure 7- Example essay of a KY student who was deemed to have written well

Ability to Identify and Differentiate

This competency was judged by analysing different sets of questions. Students were shown pictures, asked to identify odd ones out, or appropriate shapes to complete the picture. The totals were scored and students were grouped based on their performance.

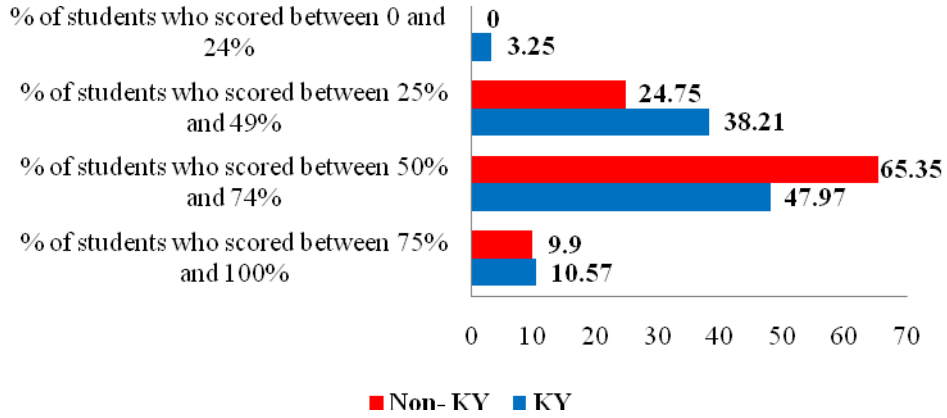


Figure 8- Ability to identify and differentiate for Class III

Approximately 10% of the students from both systems had scored 75% or above. However, 65.35% of the Nali- Kali students managed to score between 50% and 74% as opposed to 47.97% in the Kalikayatna system. Totally, the proportion of Nali- Kali students scoring above 50% was significantly higher and a larger percentage of Nali- Kali students are found in the middle category.

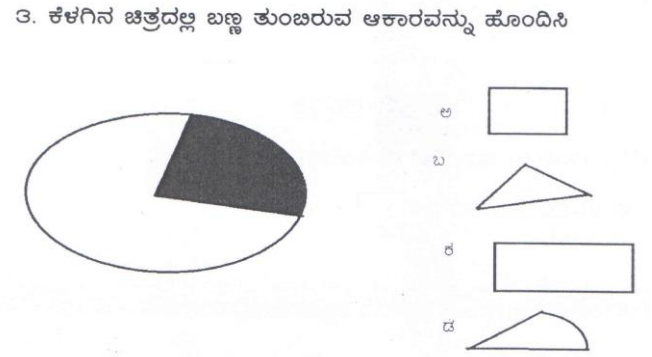
	Alternate Hypothesis- P values		
	NK<KY	NK ≠KY	NK>KY
% of students who scored between 0 and 24%	0.00	0.00	1
% of students who scored between 25 and 49%	0.02	0.03	0.98
% of students who scored between 50 and 74%	1	0.01	0.05
% of students who scored between 75 and 100%	0.43	0.87	0.56

Table 10- P Values for ability to identify and differentiate (Class III)

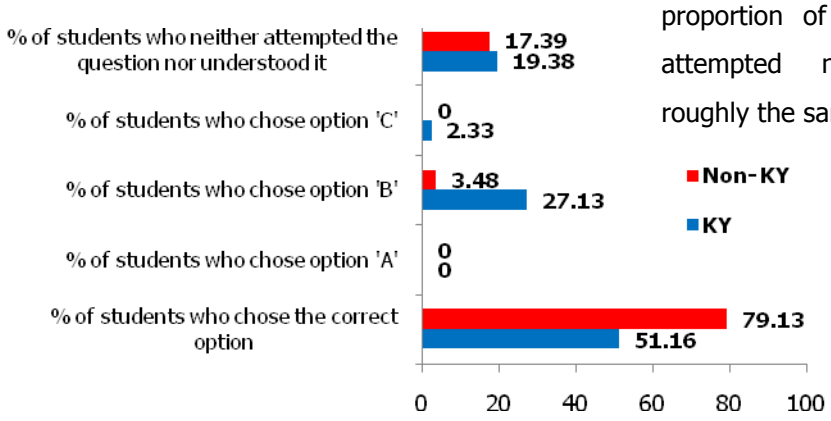
Below is an example of one item analysis use for gauging the ability to identify and differentiate:

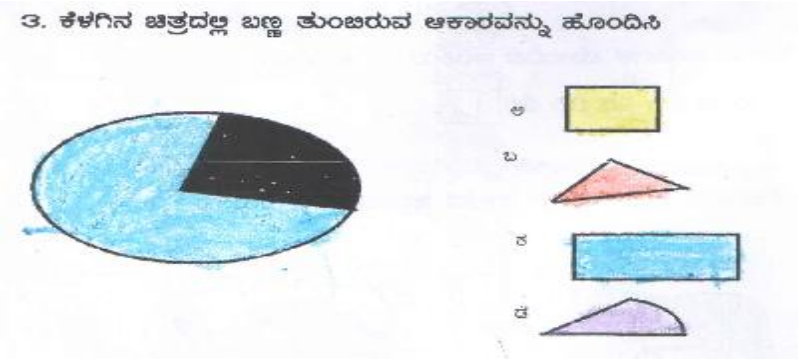
SAMPLE QUESTION:

Students were asked which choice represented the shaded region in the circle most closely.



Nali- Kali students did fare better in this question with approximately 79% of the students choosing the correct option. Only 51.16% of the Kalikayatna students managed to choose the correct option. Almost a quarter of the sampled KY students chose option 'C' as their answer. The proportion of students who neither attempted nor understood was roughly the same.





Student from a KY school who did not understand the question

Ability to Apply

Students were asked questions which required them to draw a triangle inside a circle and a time / clock related question, which required them to identify the time. Individual marks were added and the students were grouped based on their totals.

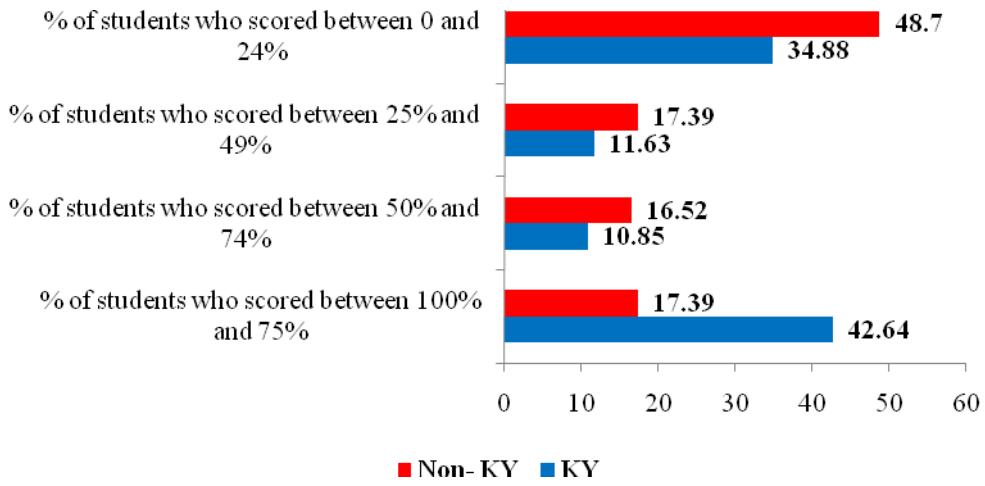


Figure 9- Ability to apply for Class III

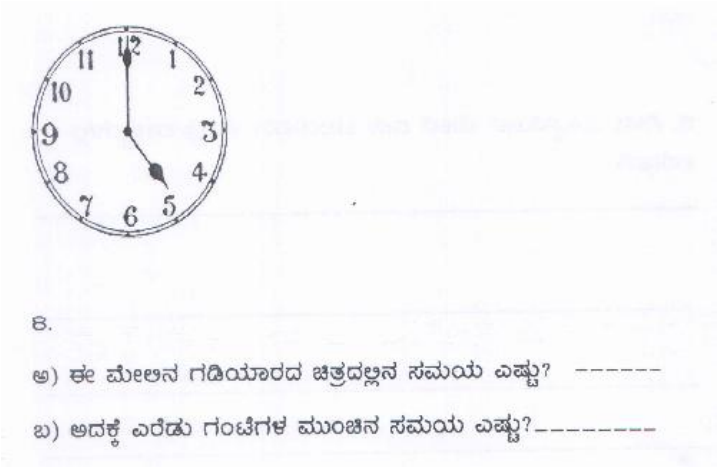
In contrast to the ability to identify and differentiate, Kalikayatna students did fare better than the Nali-Kali students when it can to the ability to apply. 42.64% of the Kalikayatna students managed to score at least 75% while only 17.39% of the Nali- Kali students managed the same. Further, proportion of students who scored below 25% was higher among the Nali- Kali students with 48.70% as opposed to Kalikayatna, where approximately 39% of the students performed poorly. The proportion test confirmed that a significantly larger proportion of Kalikayatna students both scored between 50 and 74% and 75 and 100%, when compared to Nali- Kali Students.

	Alternate Hypothesis- P values		
	NK<KY	NK ≠KY	NK>KY
% of students who scored between 0 and 24%	0.9857	0.0287	0.0143
% of students who scored between 25 and 49%	0.9000	0.2001	0.1000
% of students who scored between 50 and 74%	0.9020	0.1961	0.0980
% of students who scored between 75 and 100%	0.0000	0.0000	1.0000

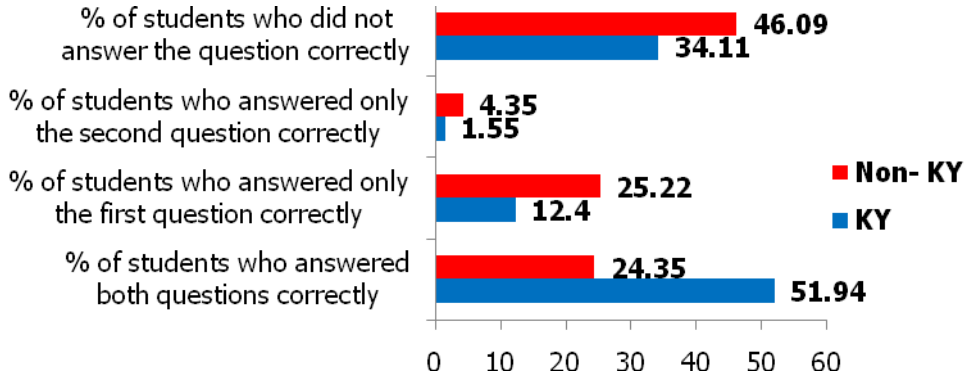
Table 11- P Values for ability to apply (Class III)

Below is the example of the clock and time question:

SAMPLE QUESTION:



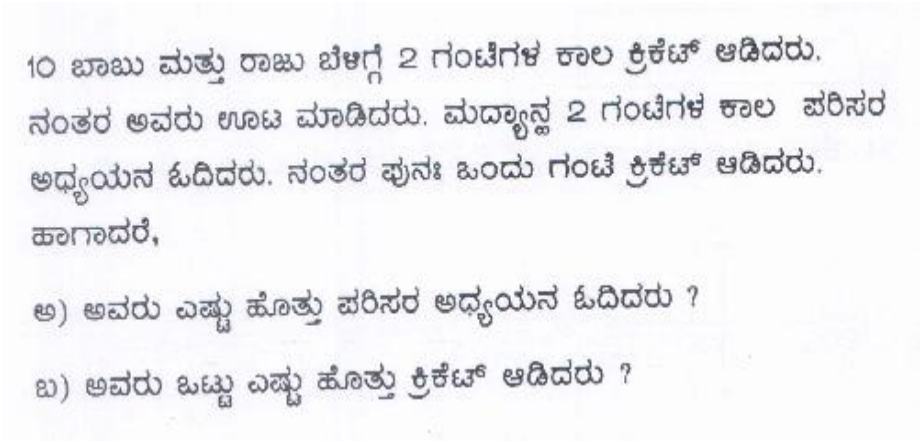
Students were asked to identify what the time was and what the time would have been two hours earlier.



Over half of the Kalikayatna students managed to answer both the questions correctly, while 24.35% of the Nali- Kali students managed the same. Almost half of the Nali- Kali students were unable to answer both questions. A large number of students felt that the time indicated on the clock was 12 O' Clock. 18 (13.95%) KY students and 33 (28.69%) NK students felt that the time was 12 O' Clock. Further, 16 NK students felt that the answer to the second question was 7 O' Clock.

Ability to Analyze and Examine

Students were given a small word passage and where asked to answer questions based on the passage. The word passage gave the case of "Babu" who played cricket for two hours, studied for two hours and then played cricket again for an hour. Students were asked to calculate how long he played cricket and studied for.



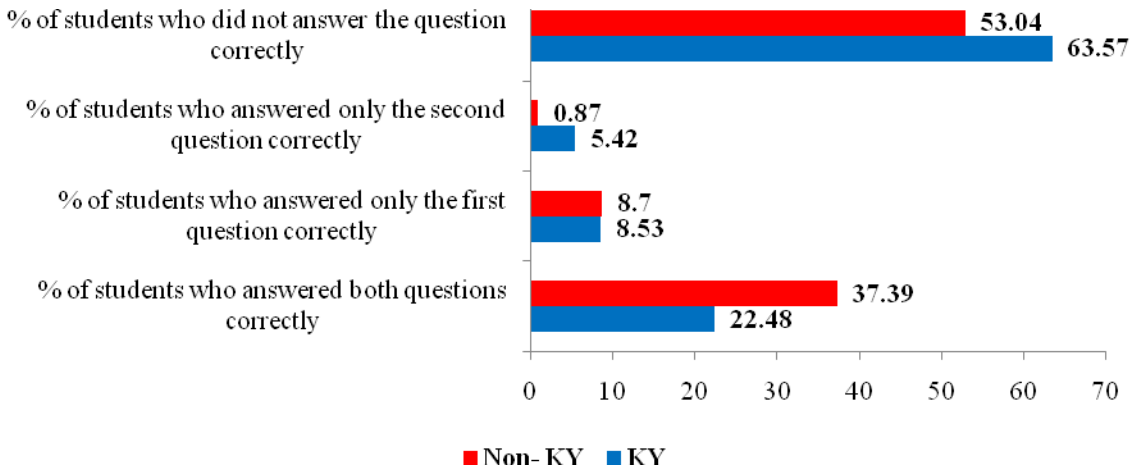


Figure 10- Ability to analyze and examine for Class III

Approximately 37% of the Nali- Kali students were able to answer both the questions correctly whereas only 22.48% of the Kalikayatna students managed to do the same. 63.57% (82) of the Kalikayatna students were unable to answer both the questions. Amongst the 82 who did not answer both the questions, 80 chose to omit the question altogether. The proportion test showed that the differences were significant, and overall, the students in schools implementing Kalikayatna could be interpreted as having performed worse in the ability to analyse and examine than those in other schools.

	Alternate Hypothesis- P values		
	NK<KY	NK ≠KY	NK>KY
% of students who did not answer the question correctly	0.0478	0.0955	0.9522
% of students who answered only the second question	0.0231	0.0462	0.9769
% of students who answered only the first question	0.6492	0.7016	0.3508
% of students who answered both the questions	0.9946	0.0108	0.0054

Table 12- P Values for ability to analyze and examine (Class III)

Mathematics

From the written assessment sheets, a total of five questions that were clearly and directly related to mathematics were separated for this analysis. The total scores earned by every child across these five items were added and the students were grouped based on the total marks they scored.

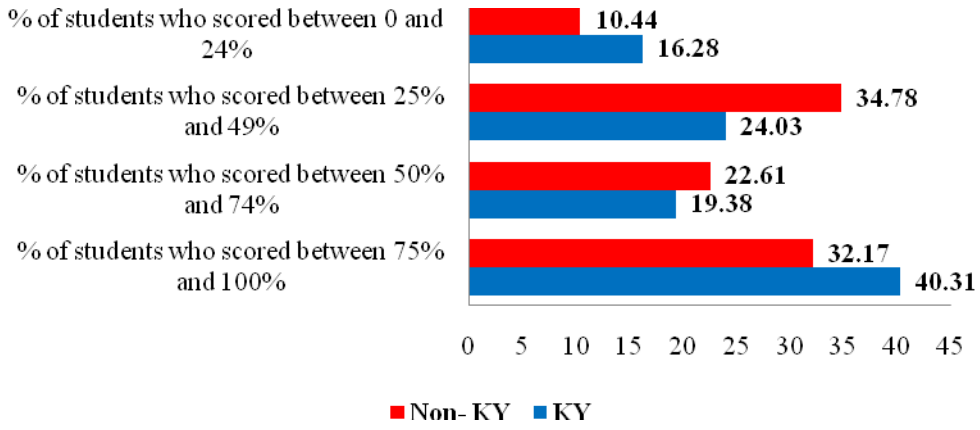


Figure 11- Mathematics skills for Class III

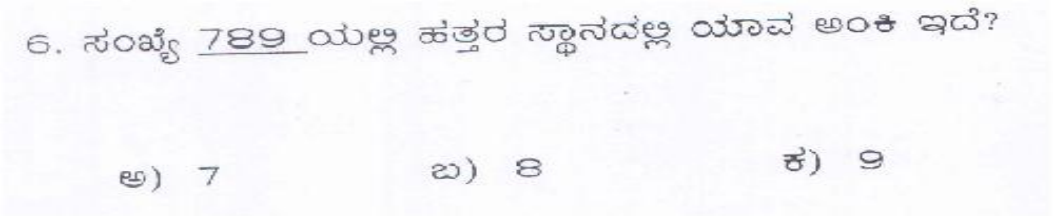
A higher proportion (40.31%) of Kalikayatna's students managed to score above the 75% mark and a higher proportion also figured in the lowest category, i/.e., students who score between 0 and 25 percent scores. In other words, majority of the students in Kalikayatna schools were at the either end of distribution whereas approximately 68% of the Nali-Kali students are Kalikayatna students were in the two middle class intervals of 25-50 percent and 50-75 percent. This means that the performance of Kalikayatna students shows a more extreme distribution than that of Nali- Kali students. This becomes even clearer when one applies proportion test. The following Table shows that in the first level a significantly larger proportion of Kalikayatna students are present. A significantly larger proportion of Nali- Kali students perform at the second level. At the third level, there are no significant differences in proportions. In the final level (75% to 100% level) a large percentage of Kalikayatna students perform better.

	Alternate Hypothesis- P values		
	NK<KY	NK≠KY	NK>KY
% of students who scored between 0 and 24%	0.09	0.18	0.91
% of students who scored between 25% and 49%	0.91	0.07	0.03
% of students who scored between 50% and 74%	0.73	0.54	0.27
% of students who scored between 75% and 100%	0.09	0.18	0.91

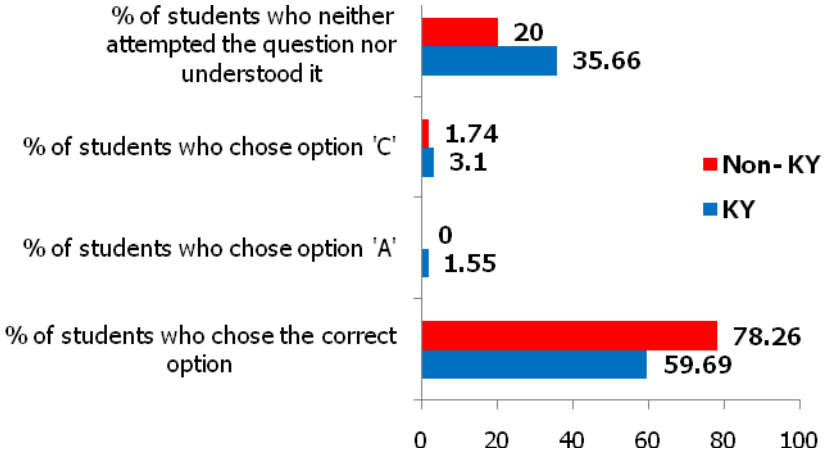
Table 13- P Values for mathematics skills (Class III)

The mathematics analyses here included five questions out of which three were simple questions of number progression and simple multiplication. The two remaining questions were more tough; one also tests the ability to analyse and examine, and the item analysis has been already been included. Another was linked with place value and the below is the item analysis showing that students in schools implementing Nali-Kali performed better than those in schools implementing Kalikayatna. However, it must be noted that the analysis does not reflect whether children have gained an intrinsic knowledge of mathematical concepts (e.g., concept of numbers, place values, etc) or not. A better performance on many of the above-mentioned items can be an indicator of rote mathematical skills or learning standardized patterns, made familiar to children through repeated practice with questions given in set formats. This need not guarantee the development of a more deeper understanding of numbers or of mathematical operations or concepts as several studies have shown (e.g., refer Baroody and Ginsberg , 1983; Ryans and Williams, 2007).

SAMPLE QUESTION:



The question was asked to see if students were aware of place values in Mathematics.



Approximately 60% of the Kalikayatna students and 78% of the Nali- Kali students managed to answer this question correctly. A small handful of students chose option A or C. A larger proportion of students who were unable to answer this question came from the Kalikayatna process with 35.66% while 20% of the Nali- Kali students were unable to answer the same. The students from the Nali- Kali process did fare better in this question.

T test was applied to see the significance level of the difference in mean scores. This was conducted to test if there were significant differences between the average mathematics and language scores between the two approaches. What emerges is that while in language, using a 10% level of significance, Kalikayatna students perform better, there is no significant difference when it comes to Mathematics. However, it would be important to point out that individual item analysis suggests that students of class III in Nali Kali schools are usually better in solving higher order mathematics problems. Is this because of routinised practice?

Mathematics

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]
Kalikayatna	129.00	13.70	0.64	7.31	12.42	14.97
Nali- Kali	115.00	13.51	0.62	6.60	12.29	14.73
Combined	244.00	13.61	0.45	6.97	12.73	14.49

Table 14- Means scores for mathematics, Class III

Language

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]
Kalikayatna	123.00	14.98	0.49	5.48	14.01	15.96
Nali- Kali	101.00	12.76	0.60	6.08	11.56	13.96
Combined	224.00	13.98	0.39	5.85	13.21	14.75
Diff		2.22	0.77		0.70	3.75

Table 15- Means scores for language skills, Class III

Alternate Hypothesis	Mathematics	Language
KY <NK	0.5821	0.99
KY≠NK	0.8539	0.0045
KY>NK	0.4179	0.00022

Table 16- Alternate hypothesis for mathematics and languages, Class III

Collaborative Learning

Collaborative learning is an extension of the constructive approach, in which knowledge is viewed as a social construct, and peers create knowledge together. Theories of collaborative learning are attributed to Lev Vygostsky. Interaction between peers and accomplishing tasks together is given importance in this approach. Instructors have found that students often teach others, clarifying misconceptions and addressing misunderstandings of each other.[3]

The benefits of collaborative learning include development of higher- level thinking, oral communication, self- management and leadership skills, promotion of student – faculty interaction, increase in student retention, self- esteem and responsibility, exposure to diverse points of view and in the promotion of social skills such as arbitration and negotiation[4].

Collaborative learning is an important part of the Kalikayatna process followed in most schools daily. The learner group activities each day appear to be based on the principle of collaborative learning. The learner group, typically, is composed of children with differing abilities and ages; this allows for diverse points of view, in the construction of knowledge. As part of our tools we designed two group activities for class 3 and 5, to understand the possible effects of collaborative learning. The observations from these group activities are described in greater detail below

[3]http://www.cte.cornell.edu/teaching-ideas/engaging-students/collaborative-learning.htmlttp:
[4]http://www.cte.cornell.edu/teaching-ideas/engaging-students/collaborative-learning.html

Group activity class 3

This activity examined the ability of the children to form groups and then create a dance or come up with five original exercises. The first part of the exercise was designed to measure the ability of children to form groups on their own, and also their ability to collaborate and create a dance. This part of the exercise also observed the ability of children to use their surrounding space and music. In the second part of the dance the children were asked to teach the dance or exercise that they came up with to the other group, this second of the activity gave us an opportunity to observe the children's ability to teach and interest the other group in their activity and their ability to listen.

The Activity

The third standard group activity, already described earlier, led to the organic formation of two groups. There were no stipulations on the composition of the group, other than that each group contained equal number of people. Once the two groups were formed, each group was asked to come with five dance steps or five exercises. The first group then, teaches the second group these dance steps or exercises. Then both groups perform each dance.

An observation checklist was used for each group. The observation checklist contained a set of criteria to observe. A likert scale was used to record the group activities. The four categories on the likert scale were 'strongly agree', ' agree', ' disagree' and Strongly disagree and not applicable.

Some observations

Most groups formed easily without dispute. This was true for both approaches. Generally, there was no need for outside intervention. The groups that formed were strongly based on gender. Though occasionally teachers tried to intervene and create more mixed groups. In one instance, one girl came later and was forced to join the boys group to make up equal numbers in a school following the Kalikayatna Approach. Initially, there was some resistance, but the girl was then later was made to feel part of the group.

Not all members contributed equally; there were children who were more proactive and would take the lead. Students preferred to perform dances that they already learnt, and in very few instances children came up with their own steps. Because most children were performing dances that they already knew, there was a song that usually accompanied steps.

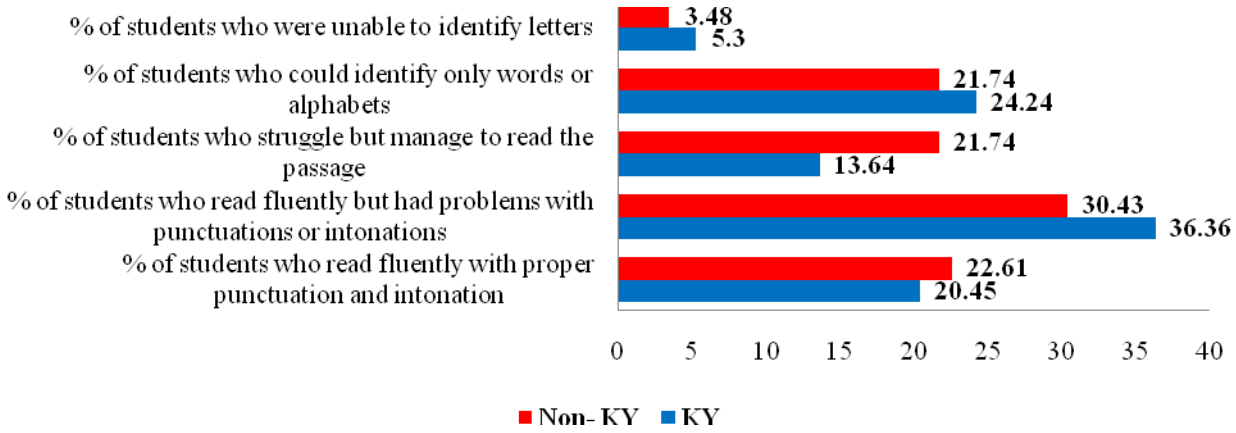
While the children had a good time and appeared to have fun two or three minutes after the activity began, perhaps the time was too short for them to overcome their shyness, and come up with something original. The children generally had to be urged to perform a dance, which was really their own. The teacher usually ended up asking them to do a dance that they had previously learnt, as there would be much hesitation to perform on their own. Generally, the girl groups were quicker in formulating a dance. Among the two approaches, the only difference seemed to be that students in the Nali- Kali approach seemed to have a more wide range of dances and songs to choose from.

5.2 Learning Levels- Class 5

Reading- Kannada

The same approach as followed in class III was followed: students were asked to read a passage in Kannada as slowly and clearly as they could. Students were scored based on reading fluency, punctuation and intonations.

Figure 12: Kannada reading levels (Class 5)



Nearly one fifth of students in both the approaches are able to read fluently with proper punctuation and intonation; this percentage being slightly higher for schools implementing Nali Kali. The analysis shows that Kalikayatna schools have lost the advantage they depicted in reading Kannada at grade III level when it comes to the same at grade V level. Contrary to what one witnessed earlier, a comparatively higher proportion of students in Kalikayatna schools could not even identify the letters or words. However, except for the category in which children struggle but manage to read, where there are significantly larger number of Non- Kalikayatna, the proportions tests suggests that the distributions are similar, and the differences are statistically not significant.

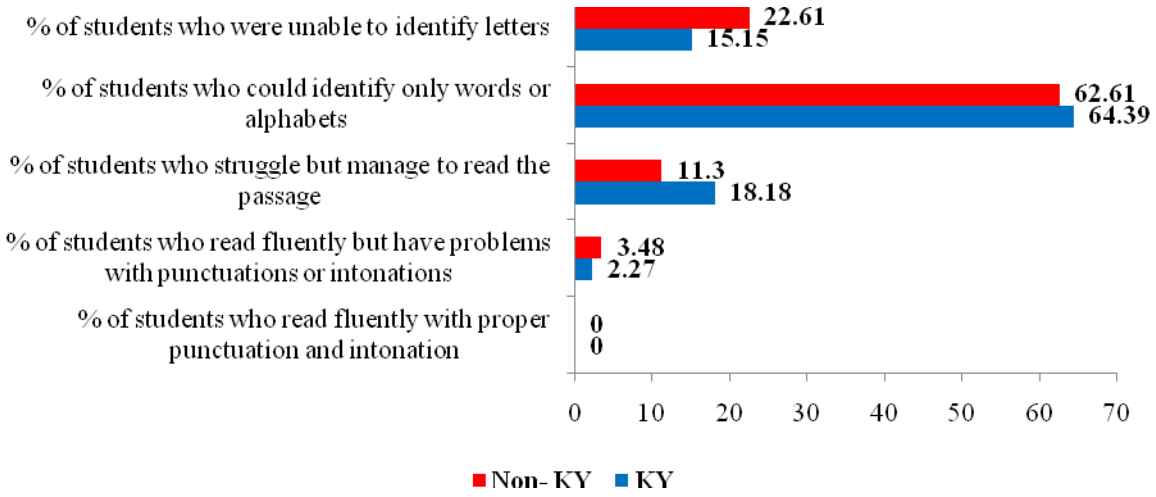
Table 17: P values for Kannada reading (Class 5)

	Alternate Hypothesis- P values		
	Non-KY<KY	Non-KY ≠KY	Non- KY>KY
% of students who were unable to identify letters	0.24	0.49	0.76
% of students who could identify only words or alphabets	0.32	0.64	0.68
% of students who struggle but manage to read the passage	0.95	0.09	0.05
% of students who read fluently but have problems with punctuation or intonation	0.16	0.32	0.89
% of students who read fluently with proper punctuation and intonation	0.97	0.06	0.03

Reading- English

Students were asked to read a passage in English as slowly and clearly as they could. Students were scored based on reading fluency, punctuation and intonations.

Figure 13: English reading levels (Class 5)



While no student was able to read fluently, a small proportion of students from both processes managed to read the passage fluently with minor problems. A slightly larger proportion of students from Kalikayatna struggled but managed to read the passage than the Nali- Kali students. While roughly 15% of Kalikayatna students couldn't read at all, 22.61% of the Nali- Kali students were unable to do the same. Proportion tests shows that Kalikayatna schools fared slightly better when it came to students' reading the passage even though they struggled. Larger proportion of the Nali- Kali students was unable to identify letters.

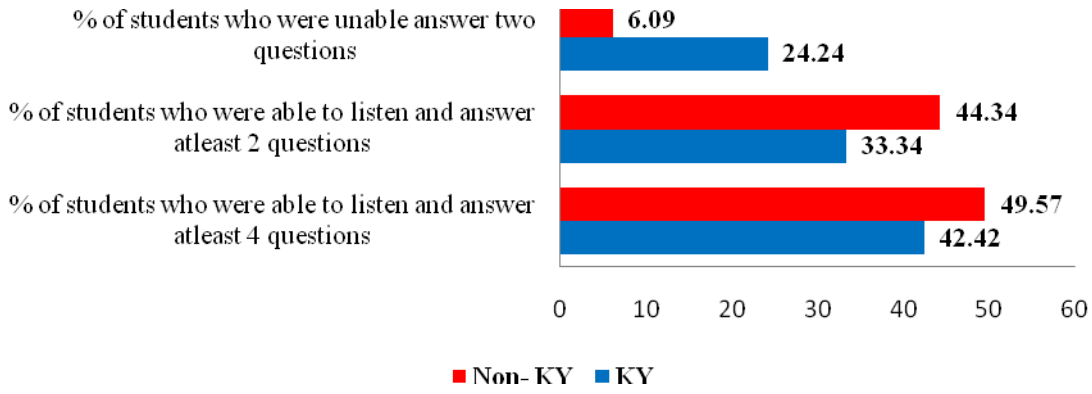
Table 18: P values for English reading (Class 5)

	Alternate Hypothesis- P values		
	Non-KY<KY	Non-KY ≠KY	Non- KY>KY
% of students who were unable to identify letters	0.9335	0.1330	0.0665
% of students who could identify only words or alphabets	0.3859	0.7719	0.6141
% of students who struggle but manage to read the passage	0.0653	0.1307	0.9347
% of students who read fluently but have problems with punctuation or intonation	0.7162	0.5675	0.2838

Listening

The approach to test the listening skill was the same: students were individually read a small passage by the researchers. Passages were read once, slowly and based on the passage students were asked six questions.

Figure 14: Listening skills (Class 5)



Barring a small percentage, almost all students (94 percent) in schools following the textbook approach (Nali Kali schools) were able to answer at least 2 questions; about half of them could answer at least four questions. In contrast, about one fourth of students in Kalikayatna schools could not answer even one question, and only about 42 % managed to answer at least four questions. The proportions test suggested significantly better performance of the non-Kalikayatna school students. These findings must be seen in relation to the earlier observations on teacher empowerment, wherein teachers clearly expressed their opinion on the difficulties with the use of Kalikayatna approach for higher classes. With the increasing complexity of language in higher grades, what needs further attention here is whether Kalikayatna teachers are equipped with the content, pedagogic and pedagogic-content knowledge required for translating higher order language skills to students.

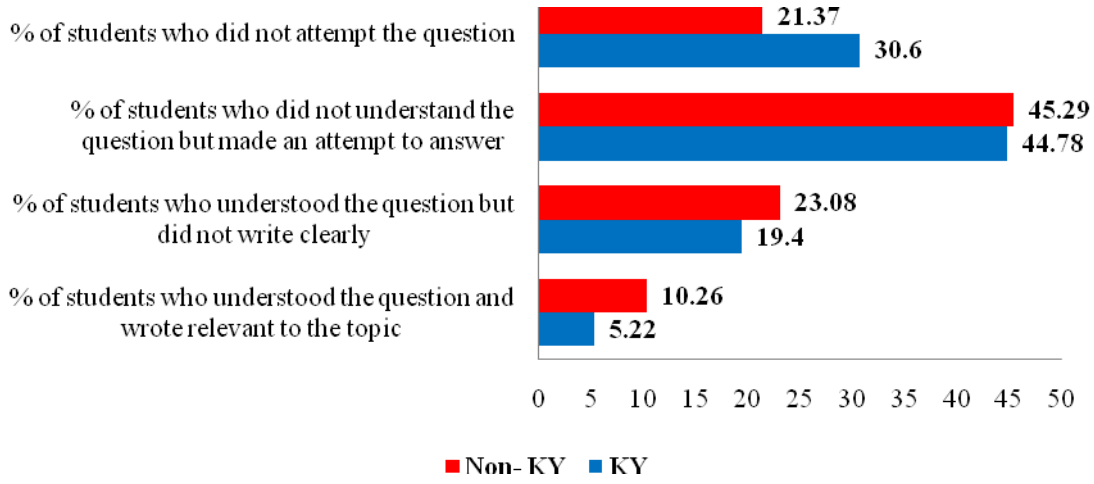
Table 19: P values for listening skills (Class 5)

	Alternate Hypothesis- P values		
	Non-KY<KY	Non-KY ≠KY	Non- KY>KY
% of students who were unable to answer two questions	0.00	0.00	1
% of students who were able to listen and answer two or three questions	0.96	0.08	0.94
% of students who were able to answer at least four questions	0.87	0.26	0.13

Writing

Students were asked to create a short story which involved a monkey, a boy, a girl, bananas and apples.

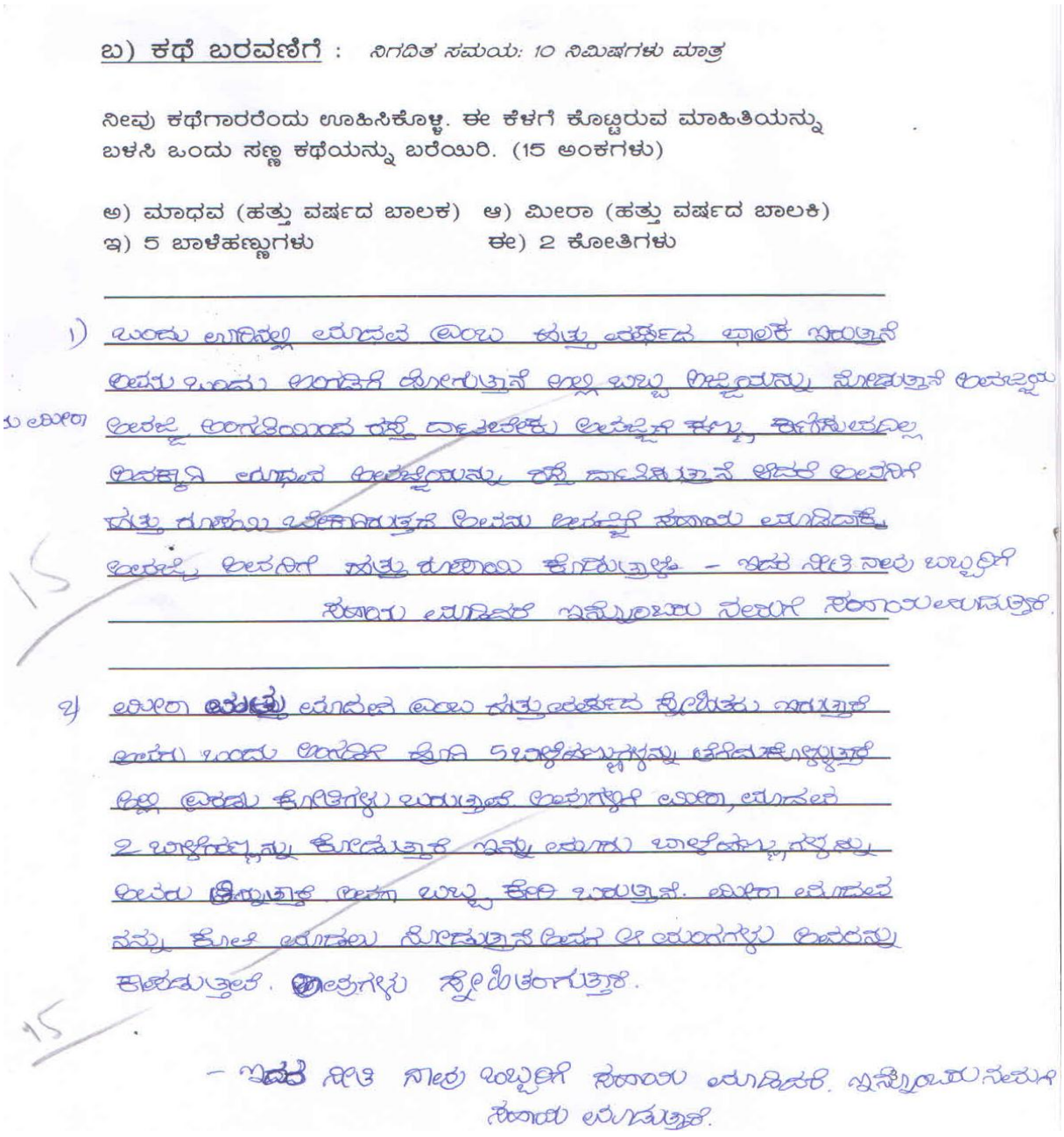
Figure 15: Writing skills (Class 5)



Approximately 10% of Non- Kalikayatna students managed to write clearly and relevant to the topic while only about 5% of Kalikayatna's students managed to do the same. The proportion of students who did not attempt the question was higher in the Kalikayatna system. The proportion of students who did not understand the question but attempted to answer was roughly the same for both the approaches. Proportion tests also confirmed that the writing skills among the students who followed the Non- Kalikayatna approach was better. Again, these scores must be understood in relation to Kalikayatna teachers' observations that the approach provided lesser practice to students in relation to writing tasks. As discussed earlier, knowing or understanding are very different skills when compared to writing (since written language is very different from spoken language), and fostering the former may not automatically lead to improved abilities on written tasks.

Table 20: P values for writing skills (Class 5)

	Alternate Hypothesis- P values		
	Non-KY<KY	Non-KY ≠KY	Non- KY>KY
% of students who did not attempt the question	0.05	0.10	0.95
% of students who did not understand the question but made an attempt to answer	0.53	0.94	0.47
% of students who understood the question and answered clearly	0.76	0.48	0.24
% of students who understood the question and wrote relevant to the topic	0.0	0.0	1



ಬ) ಕಥೆ ಬರವಣಿಗೆ : *ನಿಗದಿತ ಸಮಯ: 10 ನಿಮಿಷಗಳು ಮಾತ್ರ*

ನೀವು ಕಥೆಗಾರರೆಂದು ಊಹಿಸಿಕೊಳ್ಳಿ. ಈ ಕೆಳಗೆ ಕೊಟ್ಟಿರುವ ಮಾಹಿತಿಯನ್ನು ಬಳಸಿ ಒಂದು ಸಣ್ಣ ಕಥೆಯನ್ನು ಬರೆಯಿರಿ. (15 ಅಂಕಗಳು)

ಅ) ಮಾಧವ (ಹತ್ತು ವರ್ಷದ ಬಾಲಕ) ಆ) ಮೀರಾ (ಹತ್ತು ವರ್ಷದ ಬಾಲಕಿ)
ಇ) 5 ಬಾಳೆಹಣ್ಣುಗಳು ಈ) 2 ಕೋತಿಗಳು

1) ಒಂದು ಊರಿನಲ್ಲಿ ಮಾಧವ ಅಂಬ ಹತ್ತು ವರ್ಷದ ಬಾಲಕ ಇರುತ್ತಾನೆ ಅವನು ಒಂದು ಅಂಗಡಿಗೆ ಹೋಗುತ್ತಾನೆ ಅಲ್ಲಿ ಬಬ್ಬು ಅಜ್ಜಿಯನ್ನು ನೋಡುತ್ತಾನೆ ಅವಜ್ಜಿಯ ಅವಜ್ಜಿ ಅಂಗಡಿಯಿಂದ ರಸ್ತೆ ದಾಟಬೇಕು ಅವಜ್ಜಿಗೆ ಕಣ್ಣು ಕಾಣಿಸುವದಿಲ್ಲ ಅದಕ್ಕಾಗಿ ಮಾಧವ ಅವಜ್ಜಿಯನ್ನು ರಸ್ತೆ ದಾಟಿಸುತ್ತಾನೆ ಆದರೆ ಅವನಿಗೆ ಹತ್ತು ರೂಪಯಿ ಬೇಕಾಗಿರುತ್ತದೆ ಅವನು ಅವಜ್ಜಿಗೆ ಸಹಾಯ ಮಾಡಿದಾಕ್ಕೆ ಅವಜ್ಜಿ ಅವನಿಗೆ ಹತ್ತು ರೂಪಾಯಿ ಕೊಡುತ್ತಾಳೆ - ಇದರ ನೀತಿ ನಾವು ಬಬ್ಬರಿಗೆ ಸಹಾಯ ಮಾಡಿದರೆ ಇನ್ನೊಂಬರು ನಮಗೆ ಸಹಾಯ ಮಾಡುತ್ತಾರೆ.

15

2) ಮೀರಾ ಮತ್ತು ಮಾಧವ ಅಂಬ ಹತ್ತು ವರ್ಷದ ಸ್ನೇಹಿತರು ಇರುತ್ತಾರೆ ಅವರು ಒಂದು ಅಂಗಡಿಗೆ ಹೊಗಿ 5 ಬಾಳೆಹಣ್ಣುಗಳನ್ನು ಆಗೆದುಕೊಳ್ಳುತ್ತಾರೆ ಅಲ್ಲಿ ಎರಡು ಕೋತಿಗಳು ಬರುತ್ತಾವೆ ಅವುಗಳಿಗೆ ಮೀರಾ, ಮಾಧವ 2 ಬಾಳೆಹಣ್ಣನ್ನು ಕೊಡುತ್ತಾರೆ ಇನ್ನು ಮೂರು ಬಾಳೆಹಣ್ಣುಗಳನ್ನು ಅವರು ತಿನ್ನುತ್ತಾರೆ ಅವಗ ಬಬ್ಬು ಕೇರಿ ಬರುತ್ತಾನೆ. ಮೀರಾ ಮಾಧವ ನನ್ನು ಕೋಪ ಮಾಡಲು ನೋಡುತ್ತಾನೆ ಅವಗ ಆ ಮಂಗಗಳು ಅವರನ್ನು ಕಾಪಡುತ್ತಾವೆ. ಅವುಗಳು ಸ್ನೇಹಿತರಾಗುತ್ತಾರೆ.

15

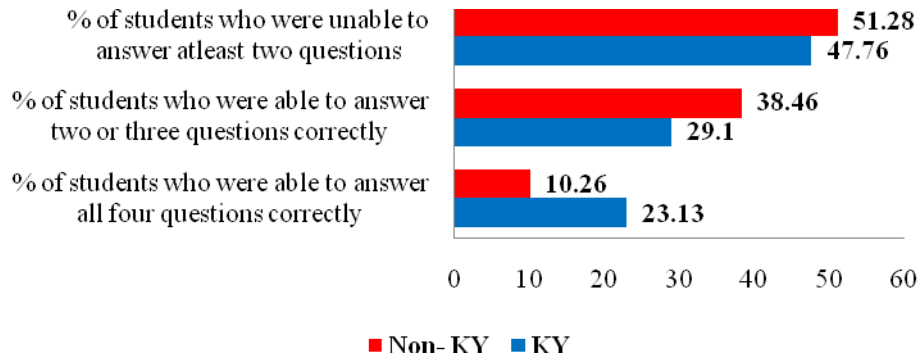
- ಇದರ ನೀತಿ ನಾವು ಬಬ್ಬರಿಗೆ ಸಹಾಯ ಮಾಡಿದರೆ. ಇನ್ನೊಂಬರು ನಮಗೆ ಸಹಾಯ ಮಾಡುತ್ತಾರೆ.

Figure 16: Example essay of a Non- Kalikayatna student who was deemed to have written well

Ability to Identify and Relate to the Surroundings

Students were asked to name everyday objects that have air and questions related to natural phenomena.

Figure 17: Ability to Identify and Relate to the Surroundings (Class 5)



Approximately 23% of the Kalikayatna students managed to answer all the questions correctly while only 10% of the Non- Kalikayatna students managed the same. Overall, the proportion of students who managed to answer at least two questions was 52.23% in the Kalikayatna process while 48.72% in the Non- Kalikayatna. Kalikayatna students did perform marginally better in this competency, as a significantly larger proportion of Kalikayatna students were able to answer all four questions correctly.

It is significant to note that the specific questions used to test this competency actually come from standard school text-books. Despite this, it is perhaps important to examine why students from non-Kalikayatna students performed poorer compared to Kalikayatna students; and how the Kalikayatna approach has been able to foster children's ability identify concepts and relate it to their surroundings. While the exact process for developing the particular concept tested during this evaluation process could not be observed, during classroom observations it was noted that teachers invited children to bring in their local language while discussing particular topics. For example, during an observation at a school in Ramanagara, it was seen that the teacher invited the students to present their own knowledge about local medicine available in relation to the topic of health being discussed in class.

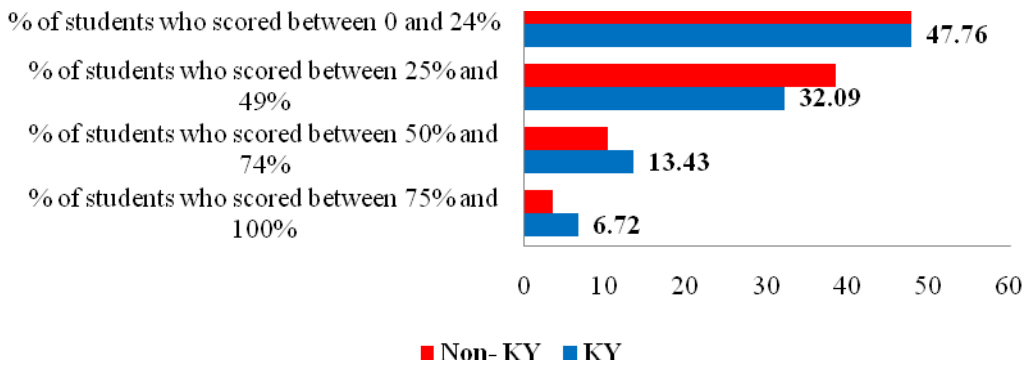
Table 21: P values for Ability to Identify and Relate to the Surroundings

	Alternate Hypothesis- P values		
	Non-KY<KY	Non-KY ≠KY	Non- KY>KY
% of students who were unable to at least answer two questions	0.71	0.58	0.29
% of students who were able to answer two or three questions correctly	0.94	0.12	0.06
% of students who were able to answer at least four questions correctly	0.00	0.01	1

Ability to Apply

We attempted to assess this skill through two problem solving questions. One problem was based on a given price list and students were asked to make a bill based on the amount of respective items that one had to buy. Another was related to the interpretation of data provided in a graph. The problems required students to apply the mathematical as well as interpretational skills.

Figure 18: Ability to Apply (Class 5)



Nearly 6.72% of the sampled students managed to score above 75% in the Kalikayatna system while only 3.42% of the Non- Kalikayatna students could manage the same. Further, 13.43% of the Kalikayatna students and 10.25% of the Non- Kalikayatna students managed to score between 50% and 74%. Overall, Kalikayatna students did manage to score better than the Nali- Kali students, although, the difference was marginal. The proportions tests suggest that the differences are not significant.

Table 22: P values for Ability to Apply (Class 5)

	Alternate Hypothesis- P values		
	Non-KY<KY	Non-KY ≠KY	Non- KY>KY
% of students who scored between 0 and 24%	0.50	0.99	0.50
% of students who scored between 25 and 49%	0.85	0.29	0.15
% of students who scored between 50 and 74%	0.22	0.44	0.79
% of students who scored between 75 to 100%	0.12	0.24	0.88

SAMPLE QUESTION:

3. ರಸೀತಿಯನ್ನು ತಯಾರಿಸಿ
ಅನಿಲನ ತಾಯಿಗೆ ದಿನಸಿ ಪದಾರ್ಥಗಳನ್ನು ತರಬೇಕಾಗಿದ್ದು ಅನಿಲ್ ಗೆ ಅದನ್ನು ಅಂಗಡಿಯಿಂದ ಕೊಂಡು ತರಲು ಹೇಳಿದರು. (೫ ಅಂಕಗಳು)
1. ತೊಗರೀಬೇಳೆ– 4 ಕಿ.ಲೋ
2. ಎಣ್ಣೆ– 2 ಲೀ.
3. ಈರುಳ್ಳಿ– 3 ಕಿ.ಲೋ.
4. ಕೊತ್ತಂಬರಿ ಜೀಉ– 6 ಕಿ ಲೋ.
5. ಕ್ಯಾರೆಟ್– 7 ಕಿ.ಲೋ.
6. ಹಾಲು – 3 ಲೀ.

ಅಂಗಡಿಯಲ್ಲಿ ಅನಿಲನು ಈ ಕೆಳಗೆ ಕೊಟ್ಟಿರುವ ದರ ಪಟ್ಟಿ ನೋಡಿದ

ಕ್ರಮ ಸಂಖ್ಯೆ	ವಿವರ	ಪ್ರಮಾಣ	ದರ (ರೂ.)
1.	ತೊಗರೀಬೇಳೆ	1 ಕಿ. ಲೋ.	20.00
2.	ಸಕ್ಕರೆ	1 ಕಿ. ಲೋ.	10.00
3.	ರವೆ	1 ಕಿ. ಲೋ.	5.00
4	ಹಾಲು	1 ಲೀ.	22.00
5	ಕೊತ್ತಂಬರಿ ಜೀಉ	1 ಕಿ. ಲೋ.	27.00
6	ಎಣ್ಣೆ	1 ಲೀ.	19.00
7	ಈರುಳ್ಳಿ	1 ಕಿ. ಲೋ.	29.00
8	ಕ್ಯಾರೆಟ್	1 ಕಿ. ಲೋ.	38.00

ನಂತರ ತಾಯಿ ಹೇಳಿದ ವಸ್ತುಗಳನ್ನು ಖರೀದಿಸಿದ. ಅವನು ಒಟ್ಟು ಎಷ್ಟು ಹಣ ಪಾವತಿಸಿದ? ಕೆಳಗಿನ ರಸೀತಿಯನ್ನು ಪೂರ್ಣಗೊಳಿಸಿ.

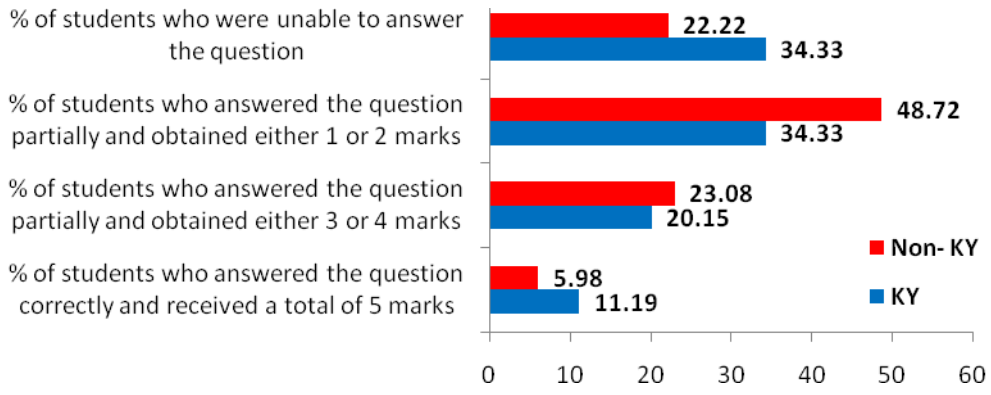
ಕ್ರಮ ಸಂಖ್ಯೆ	ವಿವರ	ಪ್ರಮಾಣ	ದರ (ರೂ.)	ಮೊಬಲಗು
1.	ತೊಗರೀಬೇಳೆ	4 ಕಿ. ಲೋ.	20.00	80.00
2.				
3.				
4				
5				
6				
ಒಟ್ಟು				

Students were given data on prices of vegetables and were asked to fill out a receipt based on items bought in a shop. Marks were awarded from 0 to 5 based on the student's ability to solve the problem.

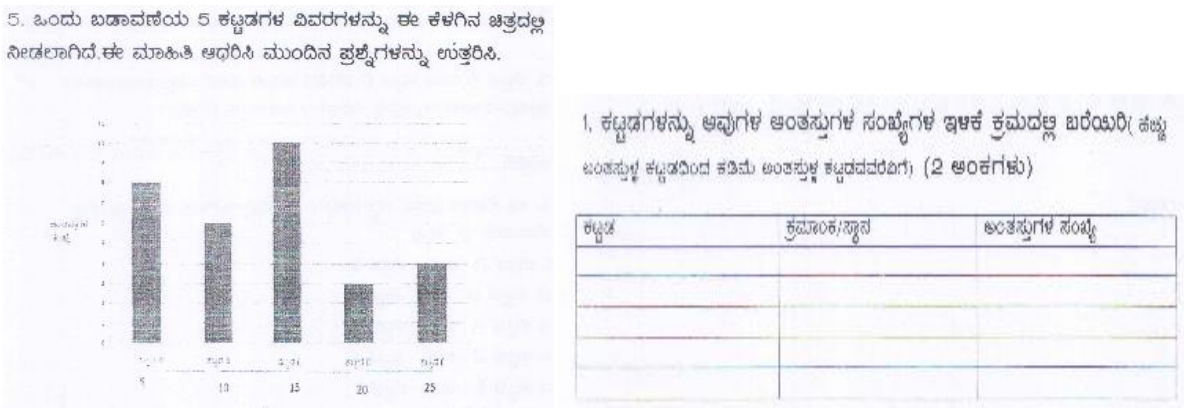
The proportion of students who answered the question fully was higher in the Kalikayatna schools.

The proportion of students who received 3 marks or higher were roughly similar in both the processes (31.34% in the KY vs 29.06% in the NK).

The proportion of students who were unable to answer the question entirely was higher in the Kalikayatna schools.



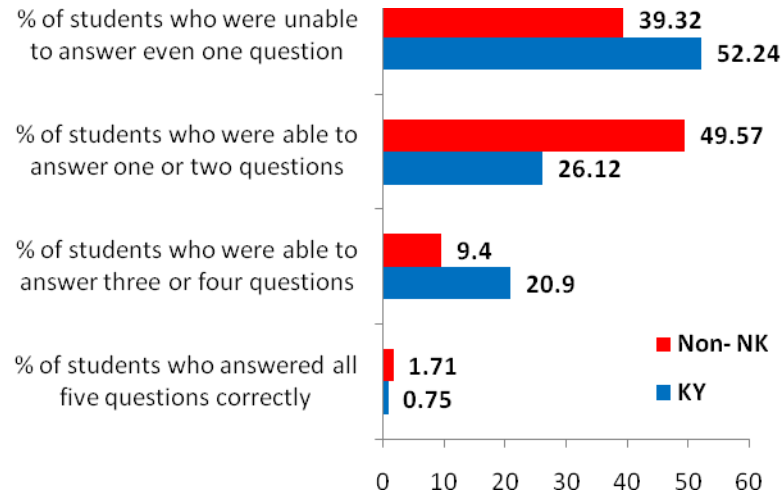
SAMPLE QUESTION:



5. ಒಂದು ಬಡಾವಣೆಯ 5 ಕಟ್ಟಡಗಳ ವಿವರಗಳನ್ನು ಈ ಕೆಳಗಿನ ಚಿತ್ರದಲ್ಲಿ ನೀಡಲಾಗಿದೆ.ಈ ಮಾಹಿತಿ ಆಧರಿಸಿ ಮುಂದಿನ ಪ್ರಶ್ನೆಗಳನ್ನು ಉತ್ತರಿಸಿ.

1. ಕಟ್ಟಡಗಳನ್ನು ಅವುಗಳ ಅಂತಸ್ತುಗಳ ಸಂಖ್ಯೆಗಳ ಇಳಿಕೆ ಕ್ರಮದಲ್ಲಿ ಬರೆಯಿರಿ(ಹೆಚ್ಚು ಅಂತಸ್ತುಳ್ಳ ಕಟ್ಟಡದಿಂದ ಕಡಿಮೆ ಅಂತಸ್ತುಳ್ಳ ಕಟ್ಟಡದವರೆಗೆ) (2 ಅಂಕಗಳು)

ಕಟ್ಟಡ	ಕ್ರಮಾಂಕ/ಸ್ಥಾನ	ಅಂತಸ್ತುಗಳ ಸಂಖ್ಯೆ



Students were given data in the form of a graph and asked to interpret and answer 5 questions.

2.ಅತಿ ಹೆಚ್ಚು ಅಂತಸ್ತುಳ್ಳ ಕಟ್ಟಡಕ್ಕೂ ಮತ್ತು ಅತಿ ಕಡಿಮೆ ಅಂತಸ್ತುಳ್ಳ ಕಟ್ಟಡಕ್ಕೂ ಇರುವ ಅಂತಸ್ತುಗಳ ಅಂತರ ಎಷ್ಟು? (1 ಅಂಕ)

ಕಟ್ಟಡ	ಕಟ್ಟಡದ ಹೆಸರು	ಅಂತಸ್ತುಗಳ ಸಂಖ್ಯೆ
ಎತ್ತರದ ಕಟ್ಟಡ		
ಚಿಕ್ಕ ಕಟ್ಟಡ		
ಅಂತರ		

3. ಕಟ್ಟಡ A ಇಂದ ಕಟ್ಟಡ D ವರೆಗಿನ ದೂರ ಎಷ್ಟು?(ಕೆಂಪ್ರಸ್ಥಾನದಿಂದ ಕಟ್ಟಡಕ್ಕಿರುವ ಅಂತರವನ್ನು ಚಿತ್ರದಲ್ಲಿ ಕೆಳಭಾಗದಲ್ಲಿ ನೀಡಲಾಗಿದೆ) (1 ಅಂಕ)

ಉತ್ತರ:_____

4. ಈ ಕೆಳಗಿನ ಯಾವ ಕಟ್ಟಡಗಳು 6 ಅಂತಸ್ತುಗಳಿಗಿಂತ ಕಡಿಮೆ ಅಂತಸ್ತು ಹೊಂದಿದೆ? (1 ಅಂಕ)

1. ಕಟ್ಟಡ A ಮತ್ತು ಕಟ್ಟಡ B
2. ಕಟ್ಟಡ D ಮತ್ತು ಕಟ್ಟಡ B
3. ಕಟ್ಟಡ A ಮತ್ತು ಕಟ್ಟಡ D
4. ಕಟ್ಟಡ D ಮತ್ತು ಕಟ್ಟಡ E
5. ಕಟ್ಟಡ E ಮತ್ತು ಕಟ್ಟಡ B
6. ಇವಾವುದೂ ಅಲ್ಲ

5. ಕಟ್ಟಡ A, B ಮತ್ತು C ಗಳ ಒಟ್ಟು ಅಂತಸ್ತುಗಳ ಸಂಖ್ಯೆ ಎಷ್ಟು? (1 ಅಂಕ)

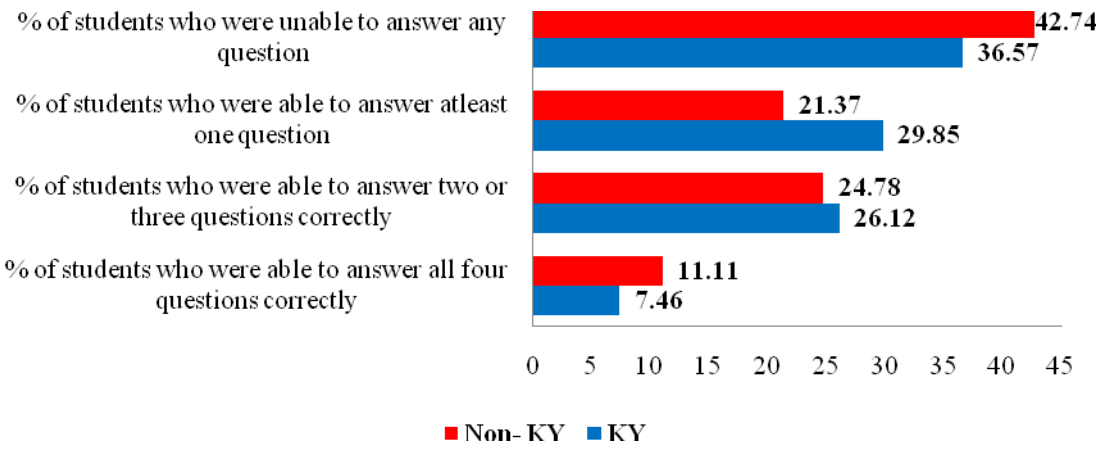
ಉತ್ತರ_____

A very small number of students managed to answer all five questions correctly. However, the percentage of students who answered at least three questions was higher among the KY schools with 21.65%. Even though more number of KY students were unable to answer even one question, a larger percentage of students from KY fared well.

Ability to Analyze and Examine

Students were asked four questions on pattern recognition, number recognition and completing a series.

Figure 19: Ability to Analyze and Examine (Class 5)



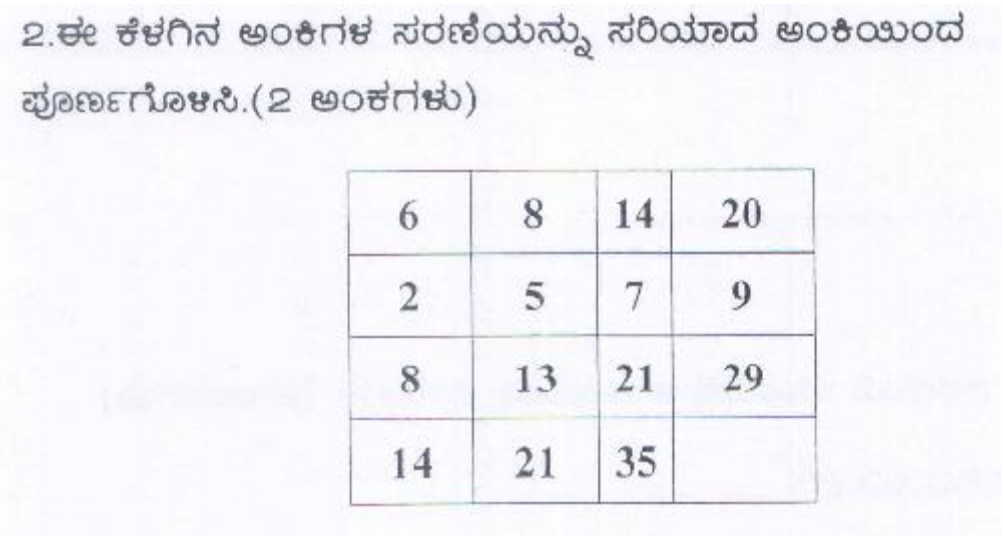
Approximately 43% of Non- Kalikayatna students were unable to answer even one question while 36.57% of Kalikayatna students were unable to do the same. 33.58% of the Kalikayatna students were able to answer at least two questions to all the questions while 35.89% of the Non- Kalikayatna students were able to do the same. The proportions of students who were able answer at least two questions was nearly the same.

Table 23: Ability to Analyze and Examine (Class 5)

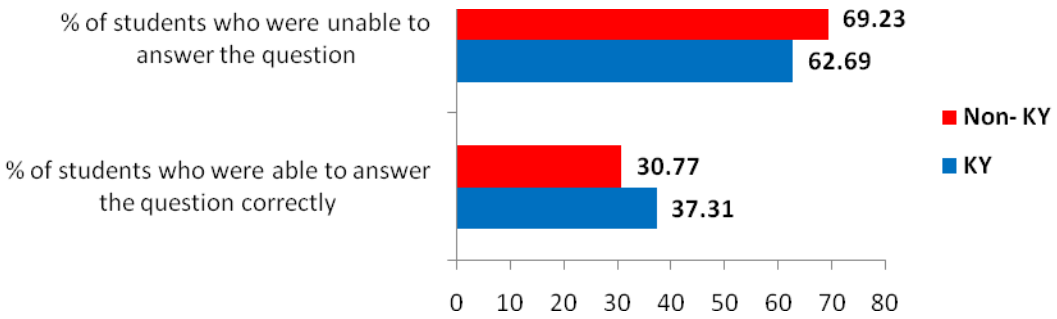
	Alternate Hypothesis- P values		
	Non-KY<KY	Non-KY ≠KY	Non- KY>KY
% of students who were unable to at least answer any question	0.84	0.32	0.16
% of students who were unable to at least answer two questions	0.06	0.12	0.94
% of students who were able to answer two or three questions correctly	0.40	0.81	0.60
% of students who were able to answer at least four questions correctly	0.84	0.32	0.16

The distribution for both approaches appears to be similar except in the category of students, who were unable to at least answer two questions, where the number of children is significantly small for those who followed the Non- Kalikayatna approach, than the Kalikayatna approach.

SAMPLE QUESTION:



Students were asked to find the missing number through logical reasoning.

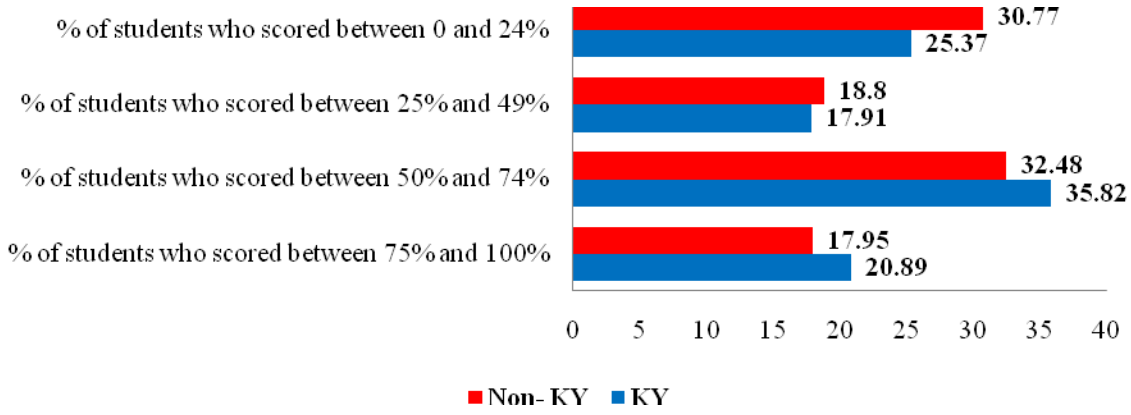


A slightly larger percentage of student from the Kalikayatna schools were able to answer the question correctly i.e. 37.31% of the KY students managed to answer as compared to 30.77% of the NK students. Further, 64 (47.76%) students in KY and 49 (41.88%) in the NK schools did not attempt the question.

Mathematics

Mathematics scores were calculated and grouped based on questions related to fractions, perimeter and a case study.

Figure 20: Mathematics skills (Class 5)



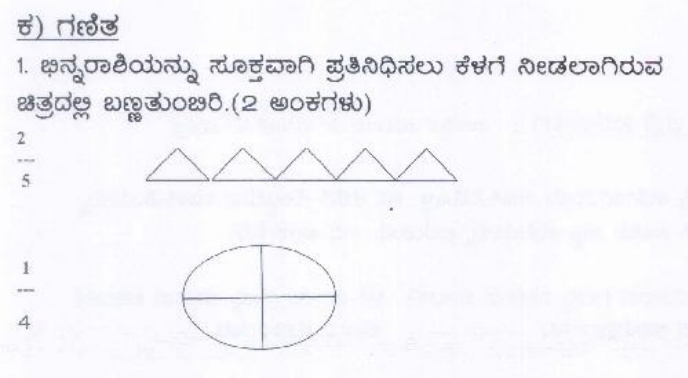
Kalikayatna students performed only marginally better with 20.89% of students scoring higher than 75%. The proportion of students who managed to score above 50% was higher among the Kalikayatna students. Almost 57% of the Kalikayatna students scored above the 50% mark while 50.43% of the Non- Kalikayatna students managed to do the same.

Table 24: P values for Mathematics (Class 5)

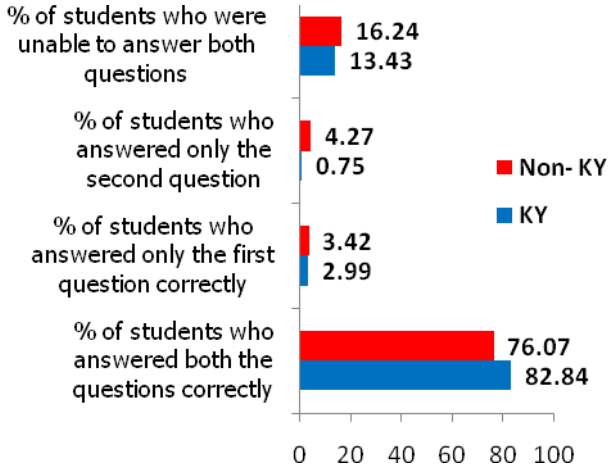
	Alternate Hypothesis- P values		
	Non-KY<KY	Non-KY ≠KY	Non- KY>KY
% of students who scored between 0 and 24%	0.83	0.34	0.17
% of students who scored between 25 and 49%	0.57	0.86	0.43
% of students who scored between 50 and 74%	0.29	0.58	0.71
% of students who scored between 75 and 100%	0.28	0.56	0.72

The proportion test suggests that the distribution of both Kalikayatna and Nali- Kali students are not significantly different.

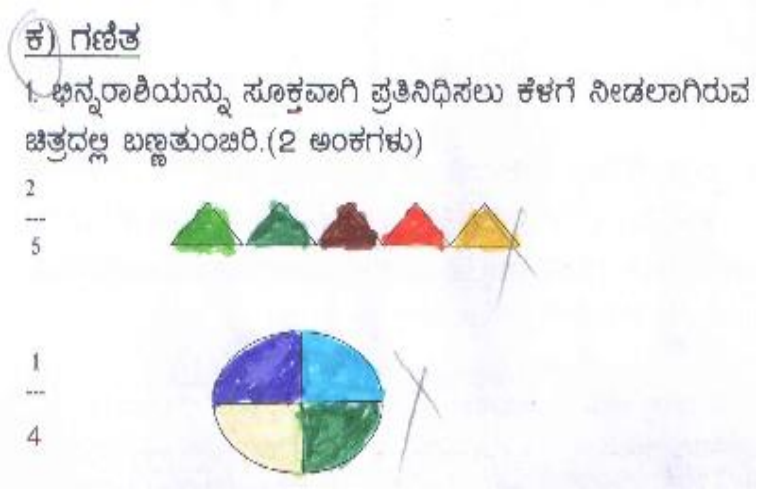
SAMPLE QUESTION:



Students were asked to shade the figures which represented the fractions.



82.84% of the KY students answered both questions correctly while 76.07% of the students in other schools managed the same. In all categories, the proportion of students was roughly similar with Kalikayatna students performing marginally better.



Student from a KY school who was unable to answer both the questions

T test was applied to test if there were significant differences between the average mathematics and language scores of students of class V between the two approaches. The means tests indicate at the 10% level of significance, on an average, that Kalikayatna students perform better at Mathematics and Non-Kalikayatna students in language. This is opposite of what emerged for class III where the difference in Mathematics mean score was not significant and Kalikayatna children performed better in Languages.

Overall, it would important to examine the reason for this reversal of trend in performance from early advantages gained by the Kalikayatna approach. This can perhaps be evaluated in relation to the difficulties that teachers are facing in applying an integrated approach to conceptual learning and subject knowledge at higher grade levels, which may perhaps also result from a lack of a clear structuring of classroom experiences and school learning processes, as seen within the government approach, that students are mainly familiar with. In the government schools, on the other hand, the shift by class to more conventional schooling practices such as division of subjects and class periods may perhaps allow for clearer goal setting and expectations from the child. This is not to suggest that the latter is therefore more beneficial. Rather, it is draw attention to how learning must be organised in a manner that learning goals, objectives, processes and expectations are also sensible to the learner. Thus, it is important to take a stock of the methodology of the programme both in relation to students understanding and expectations from schooling, and in relation to the larger school goals and the existing education system, in order to be able to design a pedagogy that also allows for students to understand the process of teaching-learning better.

Mathematics

Table 25: Means scores for mathematics, Class III

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]
Kalikayatna	132.00	12.47	0.49	5.68	11.49	13.45
Nali- Kali	115.00	14.02	0.57	6.09	12.89	15.14
Combined	247.00	13.19	0.38	5.92	12.45	13.93
Diff		-1.54	0.75		-3.02	-0.07

Language

Table 26: Means scores for language skills, Class 5

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]
Kalikayatna	132.00	15.18	0.63	7.20	13.94	16.42
Nali- Kali	115.00	16.73	0.70	7.54	15.34	18.12
combined	247.00	15.90	0.47	7.38	14.98	16.83
Diff		-1.55	0.94		-3.41	0.30

Table 27: Alternate hypothesis for mathematics and languages, Class 5

Alternate Hypothesis	Mathematics	Language
KY<NK	0.92	0.05
KY ≠NK	0.15	0.10
KY>NK	0.07	0.95

Group activity Class 5

The group activity for class 5 was conducted out in both Ramanagara and Bellary districts. Both Nali-Kali and Kalikayatna schools participated in this exercise. The group activity/game was carried out in 22 instances. The activity required at least 8- 10 children, therefore, we were unable to conduct the activity in some of the schools in Ramanagara district, where the class strength among the class 5 students was less than 10 students. The prize for this game was a bag of chocolates. This group game / activity was an exercise designed to test the decision making abilities of the group under various scenarios, their competitive nature and their ability to complete tasks as a group.

Prelimnary	Stage 1	Stage 2
• The class is divided into two groups - the composition of the groups is decided based on the calling out of numbers one and two • Each group is then given three minutes to choose a *leader* (the role of the leader is to follow rules)	• **Activity 1** • Both groups are asked to list the objects they see in a picture. • They have five minutes to compete this task. • This is a coopertive activty • A member other than the leader should write the names of the objects down *(the scribe)* • The two groups are scored based on the number of objects they write down correctly • **Activity 2** • Math test • each memeber can choosea memeber from its own group to take the test or choose a member from the other group to take the test. • A new member should do this task.	• The group that wins the first activity decides to either proceed to the next stage, or decides to share the chocolate with other group , provided the other group also agrees. • **Activity 3** • If the group to proceed to the next stage, they get the chocolate , only if they sucessfully complete another math problem. •This activity is an invidual activity where again a new member is chosen to complete the task. • If both groups have the same score at the end of the first activity, they both proceed to the nect stage. • The group if completes activity three three properly decides the distribution of chocolate

Mainly groups formed easily without much dispute. The choice of leader was perhaps a little more difficult, with multiple children wanting to be the leader; however generally children selected a leader easily, within the allotted time. There was some confusion on the possible role of the leader, and the children seemed to be disappointed that the leader's role was mainly administrative. The leader appeared to be the child who wanted to write down the answers. Most groups identified the leader in the given time of three minutes.

Stage 1

Activity 1: identification of objects in a picture.(Group activity)

Children were given 5 minutes to identify and list objects in a picture. On some occasions, the leader would begin to list the objects. They had to be instructed once again that another member in the group had to take part and play the role of the scribe. The number of objects identified varied from 5 to 19. Children generally stuck to the time limits, and generally followed the rules, they were often able to come to a decision immediately, co- operate and take others opinion into account. Though, on certain occasions, certain children dominated the activity. Most groups were able to identify around 10 to 15 objects within the allotted time period.

Activity 2: Arrangement of decimal numbers in the ascending order (Individual activity)

In this activity the group was asked to select a child who had not taken on any role in activity 1(a child who was not the leader nor the scribe) . This child could either be part of their own group or the other group. Children generally chose a member from their own group. The selected child now had to write the number s given in ascending order. The task had to be completed in 3 minutes, without any help from other group members. No group got this task right; children seem to experience some difficulties with decimals. The groups generally stuck to the time limits, other children tried to help the selected child, however they followed the rules, once they were reminded again.

No child could complete this task properly; neither from the Kalikayatna nor the Nali- Kali schools. While teachers assured that they had been taught decimals, the concept of ascending order and decimal places seemed to baffle them. Perhaps, this is an area that requires investigation.

In all cases the scores obtained from the first activity became the default score s for the second stage. In most cases the team with the higher score chose not to proceed to the next stage. The previous mathematics problem seemed to scare them. Therefore, when faced with another mathematics challenge, most children chose not to proceed and share the chocolate with their friends. Also, the children were aware of their group members' abilities, and seemed to weigh them carefully, before arriving at a decision, on whether to proceed or desist.

The group activities revealed that children are aware of the ability of other children within the group, and based on this information make informed decisions, once the game is understood.

However, the group activities also revealed, perhaps, the drawbacks of group activities, where certain individuals tend to dominate the proceedings: these observations are also supported by our classroom observations where certain children tend to dictate the learner group activities. Perhaps various incentive procedures maybe explored where greater participation by all children is ensured.

CHAPTER 6

Parental Feedback

The Kalikayatna approach facilitates parental involvement by holding parent teacher meetings and by sending the child's work home once a week for their feedback. In the other approach too, parent teacher meetings are held. Focus Group Discussions (FGDs) were conducted to understand the role and extent of parental involvement in the practice. The number of parents who attended the parent teacher meetings varied across the meetings, depending on their availability.

Among the parents we spoke to, most discussions were largely positive for both the approaches: Kalikayatna and Nali Kali. Parents felt that these approaches created enthusiasm for learning. They appeared to be impressed by the discussion based approach to learning and the fact children were learning from each other. They felt that environment created in the school was conducive to learning. However, this feedback was very general and did not necessarily emanate from a deep understanding of the approach. This became clear as the remarks were largely tentative and the concerns expressed were rarely to do with the approaches; they were to do with the need for better facilities, the need for textbooks, greater focus on English learning and the availability of teachers. In the instance, where the parents expressed overt displeasure with the Kalikayatna approach in a Ramnagara school, it seemed to be displeasure with the state of affairs, mainly related to sports equipment and other administrative issues.

Parents generally wanted a textbook, saying that it would act as guide to teach children at home and also provide some reading material for the children. In one school in Ramnagara, the parents felt that the Kalikayatna approach was too informal and there was not enough discipline. The parents felt that the alternative, private convent schools, provided greater discipline, and students learnt better in such an atmosphere. Similarly, in a Nali- Kali school in Ramanagara, parents felt that teachers should introduce marks instead of grades and should teach the children to be more disciplined. In Ramnagara, particularly, parents from both approaches seemed to feel that there should be more discipline in government schools; that government schools should aspire be more like a private convent school. Few parents seemed to be of the opinion that children should be afraid of the teacher. This reinforces the fact that parents are tuned to an approach where textbooks and discipline are considered two most critical pillars for school education. And the efforts to orient them to alternative ways of thinking have either been absent or ineffective. This is true for both the approaches.

CHAPTER 7

Evaluation of the Assessment Process

An integral component of the education process is 'assessment', and if learning for the broader context of life must be ensured, rather than for the purpose of meeting a narrow set of learning outcomes, then it is important to give a serious consideration to the form of assessment applied to the learner. While the dominant practice within education has to measure 'performance' on specific tests, Gipps (2003, p.1) argues that the culture of assessment has been undergoing a change internationally, stating that " Assessment is undergoing a paradigm shift, from psychometrics to a broader model of educational assessment, from a testing and examination culture to an assessment culture." Further, she points out that "... assessment to support learning, offering detailed feedback to the teacher and pupil, is necessarily different from assessment for monitoring or accountability purposes." Traditional models of education see the curriculum as a distinct body of information that can be transmitted to the learner, and therefore use assessments that check whether the information has been received. However newer theories of learning (such as cognitivist and constructivist), which stress the individual's role in the process of meaning making provide a more diverse process of assessment that checks for the structure and depth of students' learning (Gipps, 2003). Even the Yashpal Committee Report on Learning Without Burden (1991) stresses the importance not only of reorganising the curriculum to make learning joyful, but also the need to change the pattern of assessment that is currently followed, as it leads to a lot of stress and anxiety, while also failing to test for deep learning. Even NCF 2005 states that it is important for the education system to move towards a form of Continuous Comprehensive Evaluation (CCE), which allows teachers to be able to identify students strengths and weaknesses and provide continuous feedback. It also recognises that such evaluations shift the focus of testing from memory to higher-level competencies such as interpretation, analysis and problem-solving skills. To this extent, the Karnataka state education department has made an effort to introduce CCE at the PUC level, and also to further implement this as a practice for primary and secondary schools as well, as mandated by the Right to Education (RTE, 2009) Act.

The Kalikayatna approach, by having already introduced the concept of an ongoing 'student portfolio', thus, seems to have taken a visionary step in the right direction. Assessments consist of a range of portfolios maintained (i.e., ranging from weekly to bi-annually), which make a note of students abilities, weaknesses and strengths that can be used by teachers as guides to further develop students' abilities. Further, assessment is conceived as a collaborative process between students, parents and teachers though this could not be substantiated through fieldwork. The assessments are also designed to reflect the ability of a child to apply and synthesize knowledge and to ensure that the child has understood a particular

concept. Below, an illustration of the assessment process and its strengths is given, by analysing the portfolios developed for four students.

Assessment of Ongoing Portfolios based on Grades given by Kalikayatna

Kalikayatna grades children according to a combination of mathematics and language skills, based on the work in their ongoing portfolio. The grades awarded in the ascending order are: evolving, involved, interested and self- directed.

A sample of four portfolios was examined; two class 5 portfolios and two class 3 portfolios. Two of the four portfolios considered, one from class 3 and the other from class 5, were sample portfolios sent to us earlier by Kalikayatna. These portfolios were included because they tracked the monthly learning movement of the child. A random class 5 portfolio was also considered. The second class 3 portfolio considered appeared to be of a child, who experienced learning difficulties. The observations from these portfolios as regards the tracking of learning achievements of the child are follows.

- When a child obtains the self- directed grade in class 5, generally, the child seems to exhibit the level of competence desired. For example, when a child is graded as self-directed in writing, the ongoing portfolio includes examples of independent writing and the writing skills seem well developed. This also generally appears to be true for mathematical skills such as addition, subtraction, division and multiplication for class 5. The students can generally do multiple digit problems involving addition, subtraction, multiplication and division operations.
- In the case of addition and subtraction for a class 3 child the progress made in addition was clear. The child moved from evolving to interest. For example, the child could do three digit additions in the third year as compared to one digit problems in the first year. The ongoing portfolio suggested that the child took longer to gain proficiency in multiplication and division, when compared to addition and subtraction. The child could do three digit addition problems at the end of the third year, but only 2*1 digit multiplication problems. However, the grades obtained for both operations were the same- involved. Why this distinction was made between the two operations is not apparent. Perhaps the standards for multiplication are lower.
- In the grading of English writing skills the distinction between interested and self-directed is not transparent. Both portfolios contain words and phrases in English. However, the grades awarded are different.
- Sometimes, the portfolio did not contain examples of practice of certain skills. For instance, a class three child had progressed from an evolving to involved grade in division and time skills;

there were few or no examples of problems in division or time in the child's ongoing portfolio. Therefore it was difficult to say if this increase in proficiency had actually occurred. This was also true for a class five portfolio; the child showed no progress over three months.While the child is at the self-directed stage for most skills and can show no further improvement in these areas, it is difficult to believe that the child shows no improvement in areas where the child was performing at interested and involved levels. The areas, in which the child scored less than the self-directed grade and remained static over the whole year were decimals and fractions, areas(c), simple interest and percentages. There were few examples of problems involving decimals and simple interest. Therefore, it was very difficult to see if the child had acquired greater proficiency in these areas.

These examples perhaps suggest a need to work more with teachers in developing a nuanced understanding of the conceptual developments into which each topic can be broken down into. For example, a concept such as decimals can be broken down into many sub-competencies, including the ability to understand parts and whole, the ability to work with the base 10 system of numbers, the ability to multiply as well as the properties of multiplication and so on. Similarly, with respect to English writing as well, it is perhaps necessary to develop clear indicators that can help teachers rate these competencies, and clearly differentiate between the different levels of achievement. Further, it is also important perhaps to train teachers in the practice of ethnographic observation and note-making, since in some cases it appeared that the grades had no accompanying descriptions of the abilities or processes, through which they could be made sense of.

The Teacher's assessment of the portfolio of the class three children with learning difficulties appeared to be a true representation of the child's abilities. In all skills, except time and the identification of numbers the child was given the lowest grade. For the time and number identification skills, the child was given a grade of involved, an examination of the child portfolio revealed clearly that the child write the first 80 numbers and could draw a clock.

CHAPTER 8

Conclusions and Suggestions

Kalikayatna, as a process, envisages a shift in learning from "what students learn" to "how students learn". The teacher's role is being changed to that of a facilitator. Teachers are encouraged to take up lessons in a way which is relatable to students. Kalikayatna strives to make learning go beyond textbooks, with facilitators encouraged to help students understand and make sense of what is around them.

Prajayatna, through the Kalikayatna approach, has attempted to implement the recommendations of the NCF 2005 within the rural, multi- grade government schools it is running. While it is an arduous task to implement all recommendations, some of the key findings observed by CBPS are:

1. Greater autonomy for teachers: a reality

NCF 2005 observed that the curriculum students adhere to are often alien to them. A greater chunk of responsibility in planning lessons must come to teachers who are, in fact, the best judges of what children should be learning in the early stages of educational development. The Kalikayatna approach does adhere to this. Teachers in the collective meetings are encouraged to discuss and plan lessons on a monthly basis, thereby, structuring concepts around what the students are already familiar with. The NCF had also recommended a shift in the role of a teacher to a facilitator. Teachers are encouraged, in the approach, to be more interactive and flexible. With no fixed plan for a particular day, teachers do teach various subjects from mathematics to environmental sciences all under the banner of a single concept. As stated earlier, all teachers found the collectives useful. It helped them obtain feedback, allowed them to observe how teaching was going on in other schools and helped them clarify any doubts they had. The collective meetings do seem to go a long way in helping teachers become more empowered.

2. Activity based learning

Learning through songs and dance is an important way of delivering lessons for it prevents boredom, piques interest and reduces student absenteeism. More importantly, the activity-based method helps the child retain concepts and understand them better, as it helps children relate experientially to the topics. While the Nali- Kali students also sing and dance, it is not necessarily well integrated. Kalikayatna attempts to integrate activities with lessons which help in achieving a flow within a day's lesson, though teachers may be struggling with this at higher grade levels.

However, it was noticed there were large amounts of materials for teachers to use and students to learn from in Nali Kali classrooms. Classes were donned with posters, charts and students' works were displayed, hanging from the ceiling. Further, it was observed that the teachers from the Nali- Kali approach were able to use instructional aids more effectively.

3. Learning outcome differences largely insignificant

Although there are some differences in learning levels between the two approaches, these are largely not very significant. It would be important to take a step back and look at how learning outcomes can be reflected upon within the purview of the education system. With regards to abilities measured, there is no doubt that Kalikayatna school students have fared better in some, while Non- Kalikayatna students have done better in other aspects. But without looking at the two processes comparatively, it would be

important to understand what measuring learning outcomes hope to achieve and how they can be improved upon.

Taking language skills, for example, survey results showed us that a large percentage of Kalikayatna students struggled to read a passage but managed to get past it. Further, a large percentage of students also managed to write something in their essay question without really understanding what the question meant.

NCF goals for language have highlighted learning languages should result in children being more creative and having greater ability to express their thoughts. So what could the above survey result tell us? One may deduce that Kalikayatna students may not be afraid to answer questions even if they did not thoroughly understand a particular question. It may also tell us that these children are learning to confident about themselves. It may also give us an insight into their creativity.

The Kalikayatna approach tends to lean towards holistic learning, rather than focussing on learning outcomes. Whether the approach improves learning outcomes in the long run cannot be stated conclusively in this report. However, if there is a chance that it helps children become more confident, alienate fear while fostering creativity, then it could be seen as big positives for the programme. Additionally, fostering this integrated nature of learning perhaps also requires longer time, support outside school (in homes, within the community). Creating broader awareness about the nature of learning and the goals for learning among the community can also perhaps help them foster these skills better, through an integration of classroom learning with everyday life.

Greater teacher empowerment, specifically in relation to pedagogical-content knowledge also has a significant role to play in ensuring that the goals of the programme are met. The latter issue particular requires structural changes and support from the educational bureaucracy, which must also invest in creating a new cadre of teachers. With majority of the teachers coming from within the system that reinforces traditional methods of teaching (both through their own experiences within school, and later training), new and isolated interventions are liable to have lesser impact unless reinforced by the dominant modes of thinking and authorities.

4. Concentration towards extreme performance in Kalikayatna schools

The spread of learning levels is relatively more concentrated towards extreme for Kalikayatna children– they tend to concentrate towards the best and the worst groups. This needs further probe but both classroom observations as well as teachers interviews tend to suggest that the approach is more helpful to those who are ‘more interested’. As stated earlier, student participation in the classroom was not even and to an extent, these could explain the extreme performance being more common in Kalikayatna schools.

There possibly could be a need to have a discussion on how to promote inclusiveness within the classroom, ensuring all students partake within the classroom. Furthermore, catering to differences in learning levels among students needs to be prioritized. One of the biggest dangers of a participatory model of learning is that not all students tend to be interested. If done correctly, a structured, instruction-based, didactic model could ensure that most, if not all, children at least learn through rote. There are many positives to the participatory model of learning, but could a marriage between the two systems of education increase student participation, while ensuring more students are on a level playing field?

5. Student Assessment: Uneven in practice and unclear role in planning the teaching-learning

Another possible explanation for greater concentration around extreme performance lies in the absence of linking the student portfolio to the classroom activities. While each student's portfolio is maintained and teachers are supposed to be acting on the regular assessment that make of students, in reality, this does not seem to happen. Classroom activities are not necessarily designed taking each child's needs into account. An analysis of a few sample portfolios suggested that the grades are not always consistent, e.g., children at same stage of learning in the same class were awarded different grades. Thus, teacher empowerment may also need to focus on working with teachers on understanding assessment, its aims, goals and structure. While these practices of teacher empowerment may perhaps already be underway, more efforts may perhaps have to be invested in ensuring that teacher's understand and appreciate it, and apply it to their practice.

6. Language learning: limited to early advantages

Language, particularly reading abilities are better for students in Kalikayatna at lower levels, but the advantages seem to wane as one progress to class V. Children following Kalikayantna approach seemed particularly poorer in writing. Teachers when questioned about the possible drawbacks of the Kalikayatna approach stated that in higher classes, students do not get sufficient writing practice. An examination of the ongoing student portfolios also revealed that examples of compositions, letters and other such writing activities were few and far between. A study by University of Pennsylvania suggested that one of the reasons for low learning levels was the emphasis on copying rather than comprehension (Gelda et al 2014). The ongoing portfolios also contain many samples of copied poems. These copying activities are not necessarily geared towards more 'practice' whereas in the Nali Kali as well as textbook approach, there is an in-built emphasis on repeating the activities till the point where one is perceived to have achieved a particular level of mastery. This perhaps facilitates more 'practice' and gets reflected in greater concentration of children around 'average' performance.

7. Too teacher dependent

Classroom observations clearly revealed that the Kalikayatna classes are more 'organic' as compared to Nali Kali classes that appeared to be more 'mechanical'. However, this did not necessarily translate itself into higher level of learning and more importantly, not in higher level of learning for all kinds of children. This could be due to a variety of reasons. In order to be effective, it needs to be implemented 'better' and all the steps have to be in tandem. Kalikayatna is highly dependent on teachers' initiative, and these teachers come from the same hierarchical government system where they are not necessarily used to innovate and act independently. It is possible that there is some resistance to these processes and that gets reflected in non-implementation of the approach as envisaged. This was evident in a number of teachers expressing their discomfort with complete absence of textbooks, especially those teaching class 5. One teacher had bought textbooks himself while another teacher was using Nali- Kali's work cards to teach. Nali Kali, in contrast, is tool dependent and therefore, to an extent, allows overcoming the teacher's lack of interest – in a large system, such an approach is easier to implement.

A point to remember is that this is not a criticism of Kalikayatna as an approach. But in order for the programme to be successful and run as envisaged, teachers need to go through the long- process of self transformation. Trainings and familiarization of the approach prior to teachers being inducted into the Kalikayatna schools would surely help teachers cope with a relatively new style of teaching. It would also be important for the education department to recognise the shift in training that would be required by teachers in order to be able to undergo this process of self-transformation. Departmental support in reorienting training and instituting new teacher training practices is also essential for the success of the programme.

8. Disengaged parents

While the report, *Kalikayatna: Premise and Practice (NCERT, 2010)*, stated that there was active community involvement in the Kaliakayatna approach, it was not evident in this study. Parents were largely happy about the fact that their children enjoyed coming to school and were actively learning at home. However, not many knew about the Kalikayatna approach and what it envisioned to do. A good number also wanted greater 'discipline' and demanded the use of textbooks. Although this was no different for other schools, the need for greater engagement with parents was evident in general.

In some cases it is true that children may do very well in school in spite of no involvement from their parents and community members. Parental involvement largely occurs in three forms i.e. mimicking many of school related behaviours and attitudes at home, reinforcing positive aspects of learning through attention, praise, rewards etc and providing children with direct (or indirect) learning instructions (Hoover-Dempsey & Sandler, 1995). Many studies have gone on to say that parental involvement is an important characteristic in any education system. Research has shown that the more involvement from parents have, greater can be the child's achievement levels (Cotton & Wikelund, 1993). Further, this can also be particularly significant when wanting to foster an alternate approach to learning. With parents mostly familiar with the predominant practices of schooling, support for the culture of learning that is sought to be created by the Kalikayatna approach maybe absent at home. Thus, parental awareness and training can also go a long way in supporting the programme's vision and goals.

SUMMARY OF STRENGTHS OF THE KALIKAYATNA APPROACH

Approach to Learning

Children were actively involved in the learning process and in co-constructing knowledge through discussions, thinking through, sharing concepts, etc, as advocated by NCF 2005. Classroom teaching processes were aligned with some of the tenets of NCF 2005, in that the teachers were also able to connect learning to outside the classroom.

Role of Teachers and Teacher Empowerment

Teachers showed high amounts of motivation and enthusiasm towards teaching

Competence of teachers to be able to integrate topics across subjects, even without a fixed syllabus seemed to be higher, when compared with teachers from Nali Kali schools, at least for the lower grades.

The Kalikayatna approach also made efforts to empower the teachers by organising teachers into collectives within which they got opportunities to share their learnings and doubts. This process was largely reported to be useful by teachers as it gave them regular and timely peer support. Unlike the Nali Kali approach in which the teachers' collectives function as ways of addressing administrative issues, here an overall culture of learning is trying to be instituted by the programme.

Learning outcomes

Reading abilities of children in Class 3 in Kalikayatna schools is higher than that of children in Nali Kali classes. More children in the Kalikayatna approach were able to struggle and yet read a passage in Kannada and English. What this might perhaps suggest is that the Kaliyatna approach may be more adapted to support the development of early reading, however this needs to be substantiated with more micro-observations of the classrooms.

Kalikayatna students of class 3 also seemed to show better ability to read and comprehend questions, and answer questions appropriately.

A significantly higher proportion of class 3 Kalikayatna students also performed better on the 'ability to apply', with over 50 percent of the students being able to score between 50-100 per cent on this test. This is also perhaps reflective of the differences in the teaching processes between Nali Kali and Kalikayatna , with the former using activity-based learning approaches as incidental to the learning, while learning continues to remain rote; on the other hand the latter manages to integrate the pedagogy and approach to learning better. Thus, students ability to 'apply' rather than just 'recall' seems to be better supported in the Kalikayatna process.

With respect to class 5 students, proportion tests showed that Kalikayatna students performed slightly better in English reading than children from regular state schools.

A higher proportion of Kalikayatna students in class 5 were also able to relate concepts to their surroundings.

A Few Suggestions

1. Teacher training

While teachers do receive feedback on their teaching regularly, many new teachers who do join the Kalikayatna process are not trained in the process. Training happens only when a large number of teachers join at the same time. It could be suggested that training, other than the collectives, could happen more frequently. It is also important to train teachers not only on the 'skills' but also on the approach and allow them to debate on various approaches. If teachers have to be more autonomous, they also need to learn to 'think' independently and not only 'act' independently. In this context, it would be important to share that a majority of the teachers did not know about the formative assessments of their skills and capacities carried out by Prajayatna.

Teachers of the higher classes often lamented that there were too many concepts, which require greater expertise, to teach within a short time. Teaching higher classes often becomes difficult since the concepts being taught are inherently more difficult. Thus, it requires teaching to be perhaps more flexible, and adaptive, with a thorough understanding of the knowledge base. Knowledge base being referred to here is the teacher's knowledge of the content, general pedagogical knowledge, curriculum expertise, knowledge of learners and their characteristics and understanding the ends, purposes and values of the concepts at large (Shulman, 1987). Further, an understanding of evaluation, and the relation between assessment and programme goals also needs to be fostered.

Promoting some action research among teachers could be a good means of enhancing their knowledge base while allowing them to experiment with certain methods of teaching, and therefore encouraging them to test themselves what works better. These could be designed in a manner that the indicators of success are in tandem with Kalikayatna and NCF approaches, and can be carried out in collaboration with the education department. Such a broader conceptualisation of training and teacher empowerment would also require support from the educational bureaucracy and shifts within policy and teacher training, and hence advocacy, generating awareness and debate about such practices within the government and the public sphere is important.

2. Review of the Approach

Taking some of the feedback on learning outcomes as evidenced in this study, a re-look at the approach as it is being practiced may help enrich it further. This would be especially important for two aspects: making the classrooms more resource-rich and creating more space for 'practicing' what they have learnt.

Resource-rich classroom can be created by bringing more books and materials, children's work, parents' work, etc. giving children greater opportunity to explore the physical dimensions of concepts. One criticism coming from a teacher was that there is too much emphasis on abstraction too early in Kalikayatna. This may or may not be true but needs to be examined seriously in view of the fact that learning outcomes are not high for majority of the children. Considering that children largely come from disadvantaged and non-literate backgrounds, it is even more important to make schools as resource rich as possible.

A question that may also need to be answered pertains to the use of teaching materials and instructional aids. Kalikayatna teacher trainings and collectives try to ensure that teachers evolve or internalise their way of teaching – using more group discussions. Teachers in the Nali- Kali schools seem to have been more effective in communicating thoughts through these aids. So, can the Kalikayatna collectives help these teachers achieve greater learning outcomes through aids rather than primarily focussing on the process wherein the teacher learns to evolve a strategy organically based on the classroom? In relation to this identifying and strengthening teachers' pedagogical knowledge by developing or securing appropriate teaching-learning material and resources would also be important.

Another drawback that emanated related to greater opportunity to 'practice' – this could be in relation to writing as well as other skills and concept building. Practice need not be confined to repetitive activities – a good number of new activities could be created to allow children to practice similar skills. For instance, schools could be encouraged to bring out a monthly wall newsletter where upper class students contribute in writing after doing some given tasks: this could be exploratory (e.g., a group of students conducting a small survey in the village) or creative in nature (e.g., writing a poem or a story), and younger children could contribute drawings and other non-verbal expressions. This is just an example – many other such activities could be thought of and included in the teaching learning process.

3. **Engaging with Parents**

Parents are an important stakeholder in the process of schooling and it is important to engage with them if a new approach is being tried out and considered better for children's learning. This engagement needs to go beyond sharing of children's work in a routine manner: parents need to be communicated why a particular approach is better in a language that they understand – could be through games and discussion if these are better modes of communication. Once parents are convinced, it would also make it easier for teachers to transact as they will not have to face parental pressure about discipline and textbooks.

4. Greater role for education department

Considering that the Kalikayatna approach is attempting to institute an alternate culture of learning, and is attempting to do so within the context of mainstream schooling, it is important that the philosophy and approach of the programme be further legitimated and reemphasized by the department. The change that the approach seeks to bring to school learning is a long-term process, and requires support from multiple stakeholders over a period of time, including education department officials, teachers, and community. Thus, support from the department, not just in training teachers or providing certain resources, but also in orienting and training CRPs, block education officers, and others in-charge of the programme, as well having outreach programmes and awareness drives for parents will be important. Further, it is important that the department provide recognition to the alternative forms of assessments and achievements that become part of the approach, and emphasize the validity of such outcomes of learning to the teachers and community as well.

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APPENDIX

Written Test for Class 3

1. ಕೆಳಗಿನ ಅಂಕಿಗಳ ಮುಂದಿನ ಅಂಕಿಯನ್ನು ಬರೆಯಿರಿ

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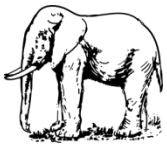
2. ಕೆಳಗಿನವುಗಳಲ್ಲಿ ಗುಂಪಿಗೆ ಸೇರದ ಪ್ರಾಣಿಯನ್ನು ಗುರುತಿಸಿ

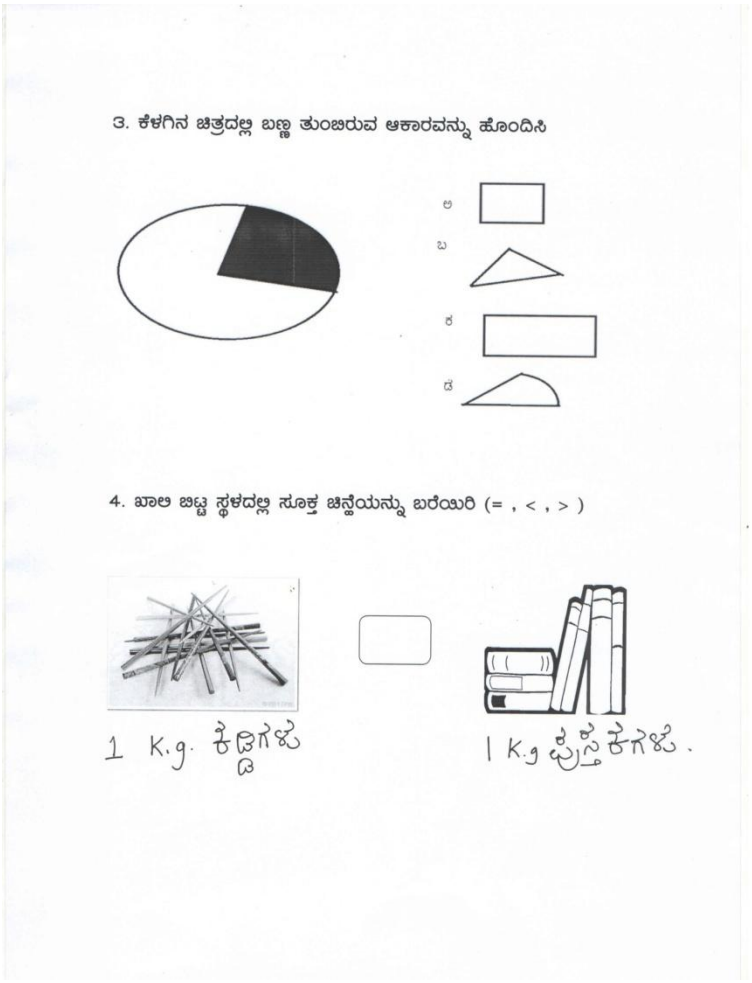
ಹುಲಿ

ಮೀನು



ಆನೆ

ಕರಡಿ



5. ನೀವು ದೊಡ್ಡವರಾದ ಮೇಲೆ ಏನು ಮಾಡುವಿರಿ? ಕೆಲವು ವಾಕ್ಯಗಳಲ್ಲಿ ಬರೆಯಿರಿ

6. ಸಂಖ್ಯೆ 789 ಯಲ್ಲಿ ಹತ್ತರ ಸ್ಥಾನದಲ್ಲಿ ಯಾವ ಅಂಕಿ ಇದೆ?

ಅ) 7 ಬ) 8 ಕ) 9

7. ಬಿಟ್ಟ ಸ್ಥಳದಲ್ಲಿ ಸರಿಯಾದ ಸಂಖ್ಯೆಯನ್ನು ಭರ್ತಿಮಾಡಿ

4 X _____ = 12

8.

ಅ) ಈ ಮೇಲಿನ ಗಡಿಯಾರದ ಚಿತ್ರದಲ್ಲಿನ ಸಮಯ ಎಷ್ಟು? ------

ಬ) ಅದಕ್ಕೆ ಎರೆಡು ಗಂಟೆಗಳ ಮುಂಚಿನ ಸಮಯ ಎಷ್ಟು?_____

9. ವೃತ್ತದ ಒಳಗೆ ಒಂದು ತ್ರಿಕೋನವನ್ನು ಬಿಡಿಸಿರಿ

10. ಬಾಬು ಮತ್ತು ರಾಜು ಬೆಳಿಗ್ಗೆ ೨ ಗಂಟೆಗಳ ಕಾಲ ಕ್ರಿಕೆಟ್ ಆಡಿದರು. ನಂತರ ಅವರು ಊಟ ಮಾಡಿದರು. ಮದ್ಯಾನ್ಹ ೨ ಗಂಟೆಗಳ ಕಾಲ ಪರಿಸರ ಅಧ್ಯಯನ ಓದಿದರು. ನಂತರ ಪುನಃ ಒಂದು ಗಂಟೆ ಕ್ರಿಕೆಟ್ ಆಡಿದರು. ಹಾಗಾದರೆ,

ಅ) ಅವರು ಎಷ್ಟು ಹೊತ್ತು ಪರಿಸರ ಅಧ್ಯಯನ ಓದಿದರು ?

ಬ) ಅವರು ಒಟ್ಟು ಎಷ್ಟು ಹೊತ್ತು ಕ್ರಿಕೆಟ್ ಆಡಿದರು ?

11. ಬಿಟ್ಟ ಸ್ಥಳವನ್ನು ಭರ್ತಿ ಮಾಡಿ

ಸೂರ್ಯ_____ ದಿಕ್ಕಿನಲ್ಲಿ ಮುಳುಗುವುದು

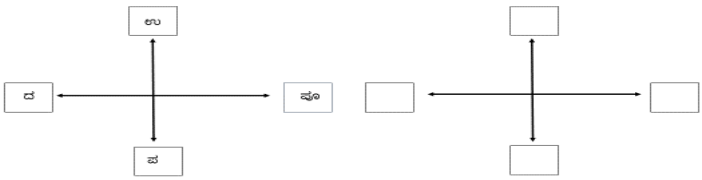
12 ,'ಸ್ಯದ ವಿವಿಧ ಭಾಗಗಳನ್ನು ಗುರುತಿಸಿ

13. ನಿಮ್ಮ ಶಾಲಾ ಆವರಣದಲ್ಲಿ ಕಾಣುವ ಎರೆಡು ಪಕ್ಷಿಗಳನ್ನು ಹೆಸರಿಸಿ

ಅ)_____

ಬ)_____

14. ಕೆಳಗೆ ನೀಡಿರುವ ಚಿತ್ರದಲ್ಲಿನ ದಿಕ್ಕುಗಳನ್ನು ಸರಿಪಡಿಸಿ ಬರೆಯಿರಿ

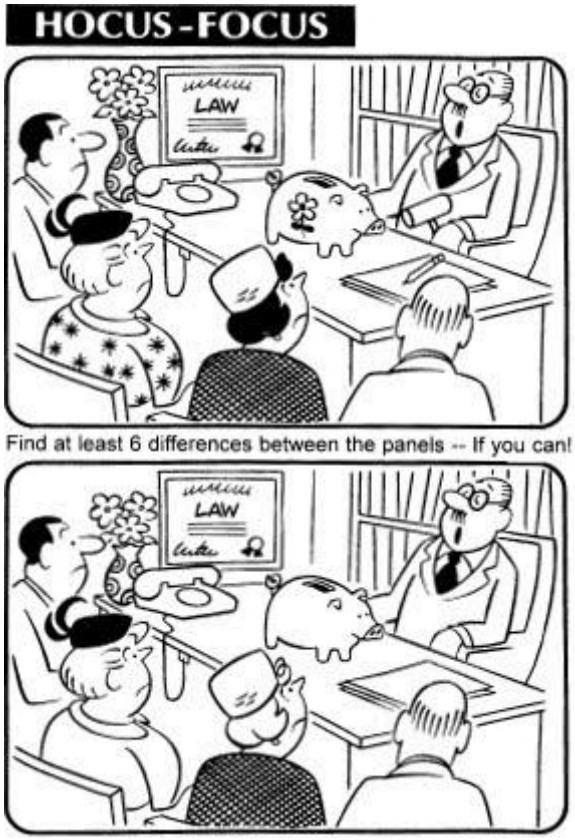


15. ನಿಮ್ಮ ಕುಟುಂಬದ ಒಂದು ಚಿತ್ರ ಬರೆಯಿರಿ.

Individual Tests for Class 3

Picture identification

[Instructions: Ask the student to point out if he / she can point out any differences. Give them about 2 minutes]



Pointers:

Spot six differences from the above picture.

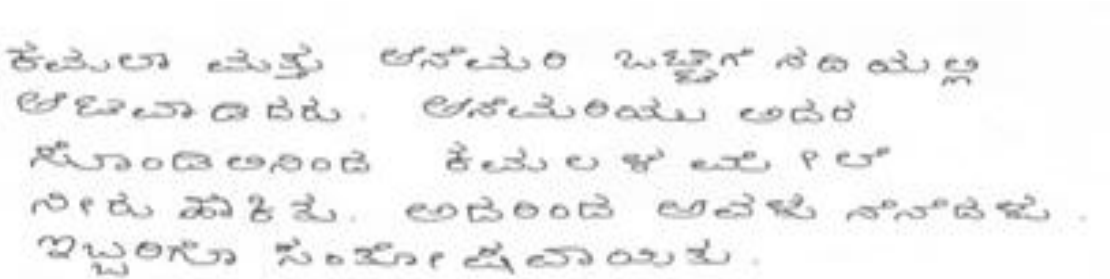
Describe what is happening in the picture.

1 point for each observation.

[Instructions: Give the student one minute to tell you what observations and associations he is making]

Describe every picture (1 point)

Kannada reading passage



Student reads the passage fluently with proper punctuation, intonation	10 Marks
Student reads the passage with either intonation and punctuation	9 marks
Student reads the passage fluently , problems with punctuation, and intonation	8 Marks
Student struggles but manages to read the passage	6 Marks
Student can only read words and not sentences	4 Marks
Student can only recognize alphabets	2 Mark
Student refuses to read	0 marks

English reading

Today is a nice day. It is not very hot, nor very cold. It is Sunday, me, my brother, two sisters and parents are all at home. We all ate food together. My sisters helped my Appa wash his bike. My brother and I played a ball game. Appa and Amma will take us to the market and we will buy fruits, sweets, chocolates, new color pencils and many story books

Student reads the passage fluently with proper punctuation, intonation	10 Marks
Student reads the passage with either intonation and punctuation	9 marks
Student reads the passage fluently , problems with punctuation, and intonation	8 Marks
Student struggles but manages to read the passage	6 Marks
Student can only read words and not sentences	4 Marks
Student can only recognize alphabets	2 Mark
Student refuses to read	0 marks

Kannada Listening skills (translated into English).

[Instructions: You will read the passage once slowly and clearly. You will then ask the student questions. Read it in Kannada.]

Raju went to the field at 1;00 clock. In the field he saw cows, birds, frogs and a snake

His father was planting onions in the field. He helped his father and came home after half an hour.

He had lunch and then started doing homework.

Questions

1. How many animals did Raju see?

2. What was his father doing?

3. What time did he come home?

4. What did he do when he came home?

5. What other animals do you see in a field?

6. What else can Raju do when he comes home?

(1 mark for each point)

Group Activity for Class 3

	Things to observe
Step 1: The class is asked to form into two roughly equal groups (A and B). The formation of these groups should occur naturally based on the student's choice.	• How are the groups formed; easily or with lot of dispute about who goes where. • Resolution of these disputes, do the students ask an elder to intervene or do the students resolve the dispute by themselves. • Composition of groups -is it based on gender or other apparent classifications • Use of available physical space • Use of space-do the students immediately, go move to far off places. Do they treat this activity as a secret activity.
Step 2 Each group is then asked to come up, simultaneously, with five dance steps or physical exercises.	• Is there contribution by all members, or do only few members appear interested and suggest steps • Are the students equally receptive to ideas and suggestions from all members • Do one or two people dominate the activities • Are attempts made to include people who are shy? • Where do ideas come from, previous movies, local dances, free ideas? • Do they just try to replicate a previous dance? • Music- Do the children use music, how do they make music? Do they sing?
Step 3 Group A teaches Group B the dance	• Are they patient while teaching the other group the dance • How do they teach the steps as a group or is one- on –one? • Are members of groups receptive to learning the steps • How does group A make it interesting for group B

Step 4 They perform the dance.	• Use of space for the dance. Do they ask where they should dance or they just dance anywhere • Is there some music made while dancing • Do they appreciate each other after the dance is over.
Step 5 Group B now teaches group A the dance	• In addition to Criteria mentioned in step 3 • Do they still appear to be interested or are they bored • Even if they are bored are they polite to the other members • Do they make comparisons between their dance and this dance • Comparisons on content of dance or is it just saying one is better than the other
Step 6 The entire group performs group B's dance	• In addition to criteria for step 4 • Are they equally appreciative of each other's talents?

Observation tool

Observations	Strongly Agree	Agree	Disagree	Strongly Disagree	N/A
1. The groups are formed easily, without dispute					
2. For the resolution of these disputes, the students ask an elder					
3. The groups are formed based on gender					
4. The students use the space available with them					
5. All members contribute effectively					
6. Students are equally receptive to new ideas from all members					
7. Some students try to dominate the activity					
8. Shy/ reclusive students are being encouraged to participate					
9. The children are using music and other props for the activity.					
10. They are patient while teaching the other group to dance?					

11. The whole group teaches the other group					
12. Group members are receptive to learning from their peers					
13. Students are making an effort to make the activity interesting					
14. Students appreciate each other once the dance is over					
15. The first group appear interested when learning from the second					
16. The first group are polite					
17. The groups make comparisons to each others dance					

Written Test for Class 5

ಅ) ಪರಿಸರ ವಿಜ್ಞಾನ

1. ಈ ಕೆಳಕಂಡ ಹೇಳಿಕೆಗಳು "ಸರಿ" ಅಥವಾ "ತಪ್ಪು" ಎಂಬುದನ್ನು ಬರಿಯಿರಿ (೨ ಅಂಕಗಳು)

ಅ) ಸೂರ್ಯನು ಒಂದು ಕೃತಕ ಶಕ್ತಿಯ ಮೂಲವಾಗಿದೆ_____

ಆ) ನೀರಿನ ಆವಿಯು ಅನಿಲ ರೂಪದಲ್ಲಿದೆ_____

2. ಕೆಳಗೆ ಕೊಟ್ಟಿರುವ ಚಿತ್ರವನ್ನು ಸರಿಪಡಿಸಿ **(೪ ಅಂಕಗಳು)**

ನೀರು ⟷ ಮಂಜುಗಡ್ಡೆ ⟷ ಆವಿ

ಉಷ್ಣತೆ ಹೆಚ್ಚಿಸಿ ಉಷ್ಣತೆ ಕಡಿಮೆಮಾಡಿ

ಉತ್ತರ:

೩.ಕೆಳಗಿನ ವಾಕ್ಯಗಳಲ್ಲಿ ಗುರುತಿಸಿರುವ ಪದಗಳನ್ನು ಬದಲಿಸಿ ವಾಕ್ಯಗಳನ್ನು ಸರಿಪಡಿಸಿರಿ (೨ ಅಂಕಗಳು)

ಅ) ನಮ್ಮ ಅಂಗೈಯನ್ನು ಉಜ್ಜಿದರೆ ಘರ್ಷಣೆಯ ಕಾರಣ ತಂಪು ಆಗುತ್ತದೆ

ಉತ್ತರ_____

ಆ) ಸಮುದ್ರದ ನೀರು ಶುದ್ಧ ನೀರಿನ ಒಂದು ಮೂಲ

ಉತ್ತರ_____

4. ನಾವು ಗಾಳಿಯನ್ನು ನೋಡಲಾಗುವುದಿಲ್ಲ.ಅದು ಸ್ಥಳವನ್ನು ಆಕ್ರಮಿಸಿಕೊಳ್ಳುತ್ತದೆ. ನಿಮ್ಮ ಸುತ್ತ ಮುತ್ತ ಇರುವ/ಕಂಡಿರುವ ಗಾಳಿ ತುಂಬಿದ ಎರೆಡು ವಸ್ತುಗಳನ್ನು ಹೆಸರಿಸಿ (೨ ಅಂಕಗಳು)

ಅ)_____

ಆ)_____

5. ಕೆಳಗೆ ನೀಡಲಾಗಿರುವ ಪ್ರಾಕೃತಿಕ ಘಟನೆಗಳ ಪರಿಣಾಮವನ್ನು ಹೆಸರಿಸಿ(೨ ಅಂಕಗಳು)

ಅ) ಅತೀ ಹೆಚ್ಚಾದ ಮಳೆ :_____

ಆ) ಮಳೆಯ ತೀವ್ರ ಕೊರತೆ:_____

ಬ) ಕಥೆ ಬರವಣಿಗೆ : *ನಿಗದಿತ ಸಮಯ: ೧೦ ನಿಮಿಷಗಳು ಮಾತ್ರ*

ನೀವು ಕಥೆಗಾರರೆಂದು ಊಹಿಸಿಕೊಳ್ಳಿ. ಈ ಕೆಳಗೆ ಕೊಟ್ಟಿರುವ ಮಾಹಿತಿಯನ್ನು ಬಳಸಿ ಒಂದು ಸಣ್ಣ ಕಥೆಯನ್ನು ಬರೆಯಿರಿ. (15 ಅಂಕಗಳು)

ಅ) ಮಾಧವ (ಹತ್ತು ವರ್ಷದ ಬಾಲಕ) ಆ) ಮೀರಾ (ಹತ್ತು ವರ್ಷದ ಬಾಲಕಿ)
ಇ) ೫ ಬಾಳೆಹಣ್ಣುಗಳು ಈ) ೨ ಕೋತಿಗಳು

_____

_____

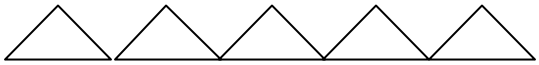
_____

ಕ) ಗಣಿತ

೧. ಭಿನ್ನರಾಶಿಯನ್ನು ಸೂಕ್ತವಾಗಿ ಪ್ರತಿನಿಧಿಸಲು ಕೆಳಗೆ ನೀಡಲಾಗಿರುವ ಚಿತ್ರದಲ್ಲಿ ಬಣ್ಣತುಂಬಿರಿ.(೨ ಅಂಕಗಳು)

2

5



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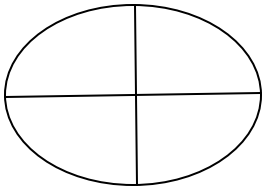


2. ಒಂದು ಶಾಲೆಯಲ್ಲಿ ೨೦೦ ವಿದ್ಯಾರ್ಥಿಗಳಿದ್ದಾರೆ. ಶಾಲೆಯಲ್ಲಿ ಸ್ವಾತಂತ್ರ್ಯದ ದಿನಾಚರಣೆಯಂದು ಪ್ರತಿ ವಿದ್ಯಾರ್ಥಿಗೆ ೮ ಪೆನ್ಸಿಲ್ ನೀಡಲು ನಿರ್ಧರಿಸಿರುತ್ತಾರೆ. ಹಾಗಾದರೆ

ಅ) ಅವರಿಗೆ ಬೇಕಾಗುವ ಒಟ್ಟು ಪೆನ್ಸಿಲ್‌ಗಳ ಸಂಖ್ಯೆ ಎಷ್ಟು? (೧ ಅಂಕ)

ಉತ್ತರ_____

ಆ) ಸ್ವಾತಂತ್ರ್ಯದ ದಿನಾಚರಣೆಯಂದು ಕೇವಲ ೧೬೦ ವಿದ್ಯಾರ್ಥಿಗಳು ಶಾಲೆಗೆ ಬರುತ್ತಾರೆ. ಹಾಗಾದರೆ ಅವರಿಗೆ ಕೊಟ್ಟ ಒಟ್ಟು ಪೆನ್ಸಿಲ್ ಸಂಖ್ಯೆ ಎಷ್ಟು?(೨ ಅಂಕಗಳು)

ಉತ್ತರ_____

ಇ) ವಿದ್ಯಾರ್ಥಿಗಳಿಗೆ ಕೊಟ್ಟ ಒಟ್ಟು ಪೆನ್ಸಿಲ್ ಸಂಖ್ಯೆಯನ್ನು (ಹತ್ತಿರದ ನೂರಕ್ಕೆ ಅಂದಾಜು ಮಾಡಿ) (೧ ಅಂಕ)

ಉತ್ತರ_____

೩. ರಸೀತಿಯನ್ನು ತೆಯಾರಿಸಿ

ಅನಿಲನ ತಾಯಿಗೆ ದಿನಸಿ ಪದಾರ್ಥಗಳನ್ನು ತರಬೇಕಾಗಿದ್ದು ಅನಿಲ್ ಗೆ ಅದನ್ನು ಅಂಗಡಿಯಿಂದ ಕೊಂಡು ತರಲು ಹೇಳಿದರು. (೫ ಅಂಕಗಳು)

೧. ತೊಗರೀಬೇಳೆ– ೪ ಕಿ.ಲೋ

೨. ಎಣ್ಣೆ– ೨ ಲೀ.

೩. ಈರುಳ್ಳಿ– ೩ ಕಿ.ಲೋ.

೪. ಕೊತ್ತಂಬರಿ ಬೀಜ– ೬ ಕಿ ಲೋ.

೫. ಕ್ಯಾರೆಟ್– ೭ ಕಿ.ಲೋ.

೬. ಹಾಲು – ೩ ಲೀ.

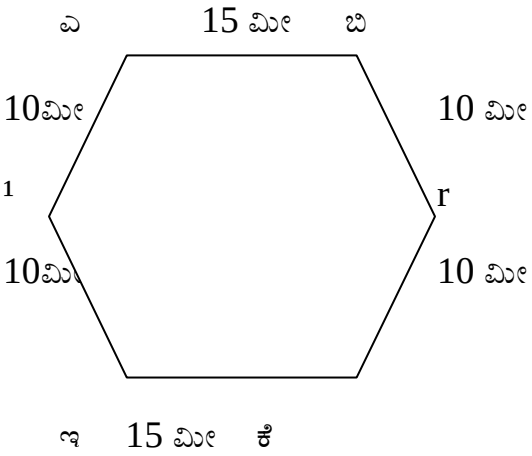
ಅಂಗಡಿಯಲ್ಲಿ ಅನಿಲನು ಈ ಕೆಳಗೆ ಕೊಟ್ಟಿರುವ ದರ ಪಟ್ಟಿ ನೋಡಿದ

ಕ್ರಮ ಸಂಖ್ಯೆ	ವಿವರ	ಪ್ರಮಾಣ	ದರ (ರೂ.)
1.	ತೊಗರೀಬೇಳೆ	೧ ಕಿ. ಲೋ.	**20.00**
2.	ಸಕ್ಕರೆ	೧ ಕಿ. ಲೋ.	**10.00**
3.	ರವೆ	೧ ಕಿ. ಲೋ.	**5.00**
4	ಹಾಲು	೧ ಲೀ.	**22.00**
5	ಕೊತ್ತಂಬರಿ ಬೀಜ	೧ ಕಿ. ಲೋ.	**27.00**
6	ಎಣ್ಣೆ	೧ ಲೀ.	**19.00**
7	ಈರುಳ್ಳಿ	೧ ಕಿ. ಲೋ.	**29.00**
8	ಕ್ಯಾರೆಟ್	೧ ಕಿ. ಲೋ.	**38.00**

ನಂತರ ತಾಯಿ ಹೇಳಿದ ವಸ್ತುಗಳನ್ನು ಖರೀದಿಸಿದ. ಅವನು ಒಟ್ಟು ಎಷ್ಟು ಹಣ ಪಾವತಿಸಿದ? ಕೆಳಗಿನ ರಸೀತಿಯನ್ನು ಪೂರ್ಣಗೊಳಿಸಿ.

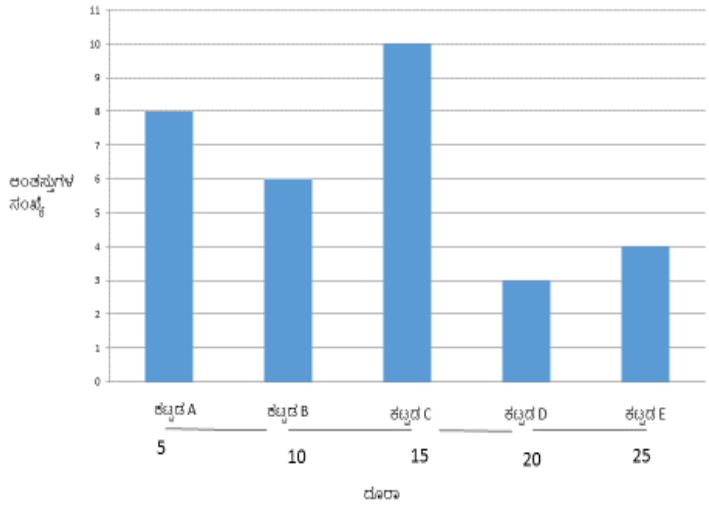
ಕ್ರಮ ಸಂಖ್ಯೆ	ವಿವರ	ಪ್ರಮಾಣ	ದರ (ರೂ.)	ಮೊಬಲಗು
೧.	ತೊಗರೀಬೇಳೆ	೪ ಕಿ. ಲೋ.	೨೦.೦೦	೮೦.೦೦
೨.				
೩.				
೪				
೫				
೬				
ಒಟ್ಟು				

4. ಕೆಳಗೆ ಕೊಟ್ಟಿರುವ ಶಾಲಾ ಆವರಣದ ಸುತ್ತಳತೆಯನ್ನು ಕಂಡು ಹಿಡಿಯಿರಿ.
(೩ ಅಂಕಗಳು)



ಉತ್ತರ_____

೫. ಒಂದು ಬಡಾವಣೆಯ ೫ ಕಟ್ಟಡಗಳ ವಿವರಗಳನ್ನು ಈ ಕೆಳಗಿನ ಚಿತ್ರದಲ್ಲಿ ನೀಡಲಾಗಿದೆ.ಈ ಮಾಹಿತಿ ಆಧರಿಸಿ ಮುಂದಿನ ಪ್ರಶ್ನೆಗಳನ್ನು ಉತ್ತರಿಸಿ.



೧. ಕಟ್ಟಡಗಳನ್ನು ಅವುಗಳ ಅಂತಸ್ತುಗಳ ಸಂಖ್ಯೆಗಳ ಇಳಿಕೆ ಕ್ರಮದಲ್ಲಿ ಬರೆಯಿರಿ(ಹೆಚ್ಚು ಅಂತಸ್ತುಳ್ಳ ಕಟ್ಟಡದಿಂದ ಕಡಿಮೆ ಅಂತಸ್ತುಳ್ಳ ಕಟ್ಟಡದವರೆವಿಗೆ) (೨ ಅಂಕಗಳು)

ಕಟ್ಟಡ	ಕ್ರಮಾಂಕ/ಸ್ಥಾನ	ಅಂತಸ್ತುಗಳ ಸಂಖ್ಯೆ

೨.ಅತಿ ಹೆಚ್ಚು ಅಂತಸ್ತುಳ್ಳ ಕಟ್ಟಡಕ್ಕೂ ಮತ್ತು ಅತಿ ಕಡಿಮೆ ಅಂತಸ್ತುಳ್ಳ ಕಟ್ಟಡಕ್ಕೂ ಇರುವ ಅಂತಸ್ತುಗಳ ಅಂತರ ಎಷ್ಟು? (೧ ಅಂಕ)

ಕಟ್ಟಡ	ಕಟ್ಟಡದ ಹೆಸರು	ಅಂತಸ್ತುಗಳ ಸಂಖ್ಯೆ
ಎತ್ತರದ ಕಟ್ಟಡ		
ಚಿಕ್ಕ ಕಟ್ಟಡ		
ಅಂತರ		

೩. ಕಟ್ಟಡ ಂ ಇಂದ ಕಟ್ಟಡ ಆ ವರೆವಿಗೆ ಇರುವ ದೂರ ಎಷ್ಟು?(ಕೇಂದ್ರಸ್ಥಾನದಿಂದ ಕಟ್ಟಡಕ್ಕಿರುವ ಅಂತರವನ್ನು ಚಿತ್ರದಲ್ಲಿ ಕೆಳಭಾಗದಲ್ಲಿ ನೀಡಲಾಗಿದೆ) (೧ ಅಂಕ)

ಉತ್ತರ:_____

೪. ಈ ಕೆಳಗಿನ ಯಾವ ಕಟ್ಟಡಗಳು ಓ ಅಂತಸ್ತುಗಳಿಗಿಂತ ಕಡಿಮೆ ಅಂತಸ್ತು ಹೊಂದಿದೆ? (೧ ಅಂಕ)

೧. ಕಟ್ಟಡ ಂ ಮತ್ತು ಕಟ್ಟಡ ಃ

೨. ಕಟ್ಟಡ ಆ ಮತ್ತು ಕಟ್ಟಡ ಃ

೩ ಕಟ್ಟಡ ಂ ಮತ್ತು ಕಟ್ಟಡ ಆ

೪ ಕಟ್ಟಡ ಆ ಮತ್ತು ಕಟ್ಟಡ ಇ

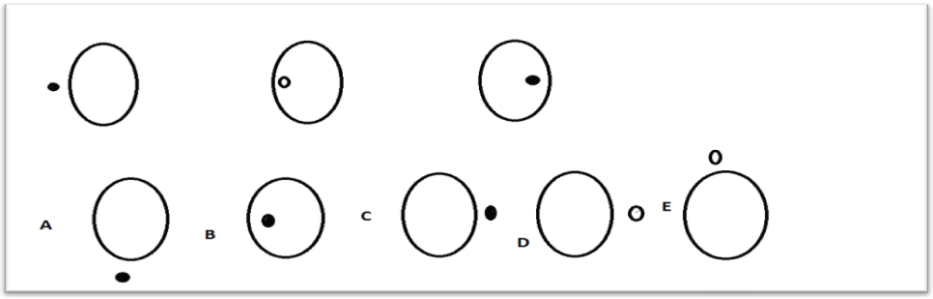
೫ ಕಟ್ಟಡ ಇ ಮತ್ತು ಕಟ್ಟಡ ಃ

೬ ಇದಾವುದೂ ಅಲ್ಲ

೫. ಕಟ್ಟಡ ೦, ಃ ಮತ್ತು ಅ ಗಳ ಒಟ್ಟು ಅಂತಸ್ತುಗಳ ಸಂಖ್ಯೆ ಎಷ್ಟು? (೧ ಅಂಕ)

ಉತ್ತರ_____

೧. ಈ ಕೆಳಗಿನ ಚಿತ್ರದ ಸರಣಿಯಲ್ಲಿನ ಮುಂದಿನ ಚಿತ್ರವನ್ನು ಹೆಸರಿಸಿ (೨ ಅಂಕಗಳು)

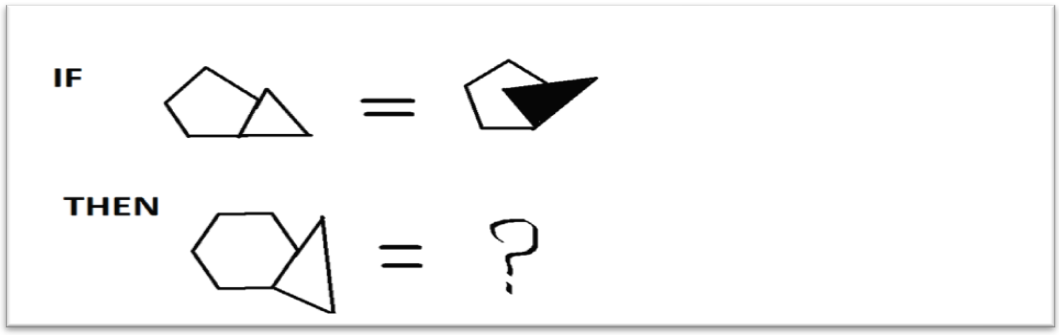


ಉತ್ತರ:_____

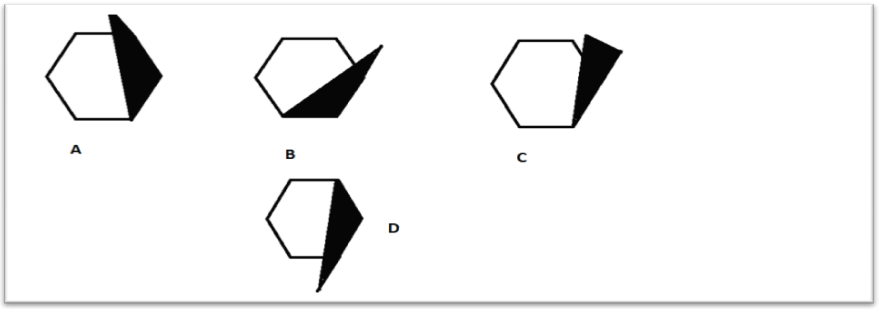
೨.ಈ ಕೆಳಗಿನ ಅಂಕಿಗಳ ಸರಣಿಯನ್ನು ಸರಿಯಾದ ಅಂಕಿಯಿಂದ ಪೂರ್ಣಗೊಳಿಸಿ.(೨ ಅಂಕಗಳು)

6	**8**	**14**	**20**
2	**5**	**7**	**9**
8	**13**	**21**	**29**
14	**21**	**35**	

3. ಸೂಕ್ತ ಉತ್ತರವನ್ನು ಆಯ್ಕೆಮಾಡಿ (೨ ಅಂಕಗಳು)



ಆಯ್ಕೆಗಳು

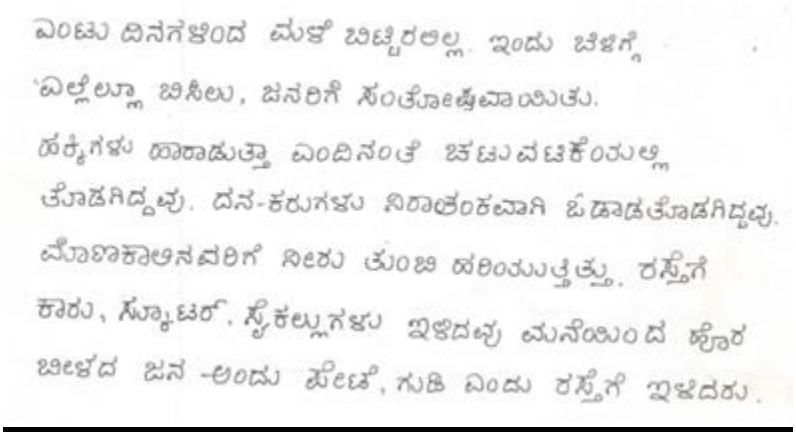


ಉತ್ತರ_____

೪. ಈ ಅಂಕಿಗಳ ಸರಣಿಯ ಮುಂದಿನ ಅಂಕಿಯನ್ನು ಬರೆಯಿರಿ (೨ ಅಂಕಗಳು)

220, 200,100,80,40,20, _____

Individual Tests for Class 5



ಎಂಟು ದಿನಗಳಿಂದ ಮಳೆ ಬಿಟ್ಟಿರಲಿಲ್ಲ. ಇಂದು ಬೆಳಿಗ್ಗೆ
ಎಲ್ಲೆಲ್ಲೂ ಬಿಸಿಲು, ಜನರಿಗೆ ಸಂತೋಷವಾಯಿತು.
ಹಕ್ಕಿಗಳು ಹಾಡುತ್ತಾ ಎಂದಿನಂತೆ ಚಟುವಟಿಕೆಯಲ್ಲಿ
ತೊಡಗಿದ್ದವು. ದನ-ಕರುಗಳು ನಿರಾತಂಕವಾಗಿ ಓಡಾಡತೊಡಗಿದ್ದವು.
ಮೊಣಕಾಲಿನವರಿಗೆ ನೀರು ತುಂಬಿ ಹರಿಯುತ್ತಿತ್ತು. ರಸ್ತೆಗೆ
ಕಾರು, ಸ್ಕೂಟರ್, ಸೈಕಲ್ಲುಗಳು ಇಳಿದವು ಮನೆಯಿಂದ ಹೊರ
ಬೀಳದ ಜನ -ಅಂದು ಪೇಟೆ, ಗುಡಿ ಎಂದು ರಸ್ತೆಗೆ ಇಳಿದರು.

Source: adapted from Aane banthu onda Aane by Na D'Souza

Aspects	**Marks**
Student reads the passage fluently with proper punctuation, intonation	10 Marks
Student reads the passage with either intonation and punctuation	9 marks
Student reads the passage fluently , problems with punctuation, and intonation	8 Marks
Student struggles but manages to read the passage	6 Marks
Student can only read words and not sentences	4 Marks
Student can only recognize alphabets	2 Mark
Student refuses to read	0 marks

English Reading:

Instructions:

Explain to the student that they will be scored on the basis of following:
1. Punctuation
2. Intonation
3. Fluency

Marking Scheme

Aspects	**Marks**
Student reads the passage fluently with proper punctuation, intonation	10 Marks
Student reads the passage with either intonation and punctuation	9 marks
Student reads the passage fluently , problems with punctuation, and intonation	8 Marks
Student struggles but manages to read the passage	6 Marks
Student can only read words and not sentences	4 Marks
Student can only recognize alphabets	2 Mark
Student refuses to read	0 marks

Passage:

Father took me to visit Uncle Lal's dairy farm. I saw all of Uncle Lal's cows. He has fifty cows. They eat grass in the big green farms. In the evening the farmers bring them to the barn to be milked. Uncle Lal sells his milk in the city.

Kannada Listening:

Passage

Kumar and Srinivas went to the shop to buy vegetables for their mother at 12 O' Clock. They bought 1 kg tomatoes and 0.5kg of onions. They had Rs. 50 with them. They shopkeeper said "Give me Rs. 20 for the tomatoes and Rs. 15 for the onions." They came back home after fifteen minutes with the change.

Questions:

1. Who went to the shop? [*Kumar and Srinivas*]

2. How many kilos of vegetables did they buy? [*One and a half kgs*]

3. How much change did they obtain from the shopkeeper? [*Rs. 15*]

4. What time did they come home? [*12:15 pm*]

5. Who goes to the market in your house and what vegetables do they buy?

6. What else things do you think should sold in the shop or market that you go to often? (marking scheme 1 point per question)

Classroom Observations: Distribution of Teachers

Observation		Strongly Agree	Agree	Disagree	Strongly Disagree	Mean
The teacher displays enthusiasm for the content the students are studying	Number of KY teachers	5	14	1	0	**3.20**
	Number of NK teachers	2	16	3	0	**2.95**
The teacher creates a positive learning environment (climate) more than just the absence of negativism and criticism -and a safe and positive space for learning	Number of KY teachers	3	17	0	0	**3.15**
	Number of NK teachers	3	16	1	1	**3.00**
The teacher presents the learners with challenging but appropriate learning goals and materials	Number of KY teachers	3	11	6	0	**2.85**
	Number of NK teachers	3	11	6	1	**2.76**
The teacher is clear and accurate in the presentation of the material to be learned	Number of KY teachers	5	11	4	0	**3.05**
	Number of NK teachers	1	15	4	0	**2.85**
The students are engaged (attentive and motivated) in the instruction	Number of KY teachers	3	13	3	0	**3.00**
	Number of NK teachers	4	8	8	1	**2.71**
The teacher organizes time, space, movement and learner behavior to achieve flow within a lesson	Number of KY teachers	5	12	3	0	**3.10**
	Number of NK teachers	2	15	3	1	**2.86**
The teacher moves around the classroom (rather than remaining at his or her desk or at one place in the classroom)	Number of KY teachers	4	14	2	0	**3.10**
	Number of NK teachers	0	14	7	0	**2.67**

The teacher invites responses from students with questions but also opens space for students to initiate talk	Number of KY teachers	3	14	3	0	**3.00**
	Number of NK teachers	2	13	5	1	**2.76**
The teacher listens carefully to the comments and responses of learners and builds on their ideas	Number of KY teachers	3	15	1	1	**3.00**
	Number of NK teachers	1	13	7	0	**2.71**
The teacher adapts instruction for special needs learners	Number of KY teachers	1	3	2	2	**2.38**
	Number of NK teachers	0	4	5	2	**2.18**
The teacher uses a variety of instructional methodologies	Number of KY teachers	3	10	7	0	**2.80**
	Number of NK teachers	1	11	9	0	**2.62**
The teacher uses instructional aids effectively to support teaching and learning	Number of KY teachers	1	12	6	0	**2.74**
	Number of NK teachers	3	12	6	0	**2.86**
The students have opportunities to engage in discussion about the content (concepts and skills	Number of KY teachers	1	16	2	0	**2.95**
	Number of NK teachers	4	10	7	0	**2.86**
The teacher helps the students to connect the learning inside of school to the uses of knowledge outside of school	Number of KY teachers	4	12	3	0	**3.05**
	Number of NK teachers	1	11	7	1	**2.60**
The students have opportunities to write/author texts for themselves and the others that support learning	Number of KY teachers	0	15	3	0	**2.83**
	Number of NK teachers	1	9	9	0	**2.58**

Evaluation of Ongoing Portfolios

Examining a sample of ongoing portfolios we are able to examine how these skills are developed. The sample consisted of 35 ongoing portfolios from the five schools. 20 class 3 portfolios and 15 class 5 portfolios. These were examined to assess the types of activities undertaken to develop various skills. The skills considered are based on the Kalikayatna progress cards.

Skills to be learnt	Guidelines issued by Prajayatna	Observations from class 3 portfolios	Observations from class 5 portfolios
English writing	Practice writing skills both numbers and letters. Write both easy and more complex letters. Write correct words and write sentences. Ability to communicate ideas in written form	English translations of words in Kannada, copied passages, alphabets, words, Rhyming three letter words- Not many examples of comprehension passages or essays	English translations of Kannada words, sounds in English. Poems, various lists of words, usage of how and what , opposites, Rare instances of questions and answers.
Kannada writing		Words, copied passages, plurals and singular- Not many examples of comprehension passages or essays	Words, copied passages .Excercises involving singular and plurals of words, Some descriptions of parents with photographs. Some examples of questions and answers and letters. Some instances of essays
Skills to be learnt	Guidelines issued by Prajayatna	Observations from class 3 portfolios	Observations from class 5 portfolios
Numbers	Identify numbers and able to locate them on the number line. Should be able to write the first 1000 numbers. Learn how to apply the	Positions, break up of numbers, upto three digits	Lists of numbers, some examples of greater and lesser than . Also break up of numbers into 1000’s, 100’s, 10’s , 1’s

	knowledge of numbers		
Addition	Use objects to do simple addition Be able to add two three digit numbers. Be able to word problems. Speed and accuracy is also important. Be able to apply addition to different situations in real life.	Three and two digits- Generally seem to have quite a few addition problems	Generally, three or more digit additions. Certain occasions multiple numbers are answered. Some instances of statement problems.
Subtraction	Similar skills as addition	Three digits examples are frequently observed	Generally three digit problems
Multiplication	Be able to use objects in real life and be able to do simple multiplication. Use tables to do multiplication. Be able to do multiplication problems with accuracy and speed. Use multiplication in the right situations	Two digits *1- attempts to link it to addition not apparent. Tables	Multiplication two and three digits.
Division	Be able to do one digit division with speed and accuracy. Employ the right sign to do	Many digits by a single digit- frequently the attempts to link it to multiplication are seen	Generally large numbers by one digit. Some instances in which it is more than one digit

	division.		
Skills to be learnt	Guidelines issued by Prajayatna	Observations from class 3 portfolios	Observations from class 5 portfolios
Fractions/ Decimals	Introduction to the concept of fractions. Understand the idea of dividing a single entity.	Very few instances- Saw some exercises with shading	Shaded segments, Cases of multiplication, improper fractions present. Instances where the relation between fractions and decimals present
Shapes		Some drawings of shapes- Do not seem to be many exercises which link shapes to the world around us	Instances of three dimensional figures and exploring properties of these figures such as number of corners and faces etc.
Time	Identify the parts of the day dawn / morning, afternoon etc. Know that time is broken into minutes, seconds, hours days. On a clock identify the time. Estimate the time taken for certain for activity	Few instances where clocks are drawn	Clocks drawn. Some problems with hours and minutes, connections with fractions, decimals and percentages not seen.
Weight	Should be introduced to weight and width- Grams , kilograms and litres. Use these terms in the		Some exposure to grams and kilograms and ideas of a balance.

	right context		
Area	Introduction to areas, perimeters. Ability to use a measuring tape to calculate areas. Use area concept in the right context	Not included	Examples of area and perimeter problems.
Skills to be learnt	Guidelines issued by Prajayatna	Observations from class 3 portfolios	Observations from class 5 portfolios
Percentages	Need to be introduced to the concept of percentages and apply it in real life. Able to relate it to the concept of percentages.	Not included	Some examples
Simple interest		Not included	Need to look again for examples