



DIMENSIONS OF EDUCATION

A English Quarterly Education and Research Journal

Gadag - Karnataka

Management in secondary schools

A distributed algorithm for DSR protocol

Digital divide : Bridging the gap

Perceptions of English language

**Stream network analysis for
watershed development**

India and neighbouring countries

Life skills in Ist PUC texts of karnataka state

Dayanand Saraswati



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IDENTIFICATION, SELF EFFICACY AND VICARIOUS LEARNING

Albert Bandura has stressed that the easiest way to display moral development would be Via the consideration of multiple factors, be they social, cognitive or environmental. The relationship between the aforementioned three factors provides even more insight into the complex concept that is morality. Further development in social cognitive theory posits that learning will most likely occur if there is a close identification between the observe and the model and if the observer also has a good deal of self efficacy. self efficacy beliefs function as an important set of proximal determinants of human mativation affect, and action which operate on action through motivational cognitive and affective intervening processes. Identification allows the observer to feel one to one Connection with the individual being indicated and will be more likely to achieve those imitations if the observer feels that they have the ability to follow through with the identication

Vicarious learning is a part of social modeling which is one of the four means to increase self efficacy social modeling refers not Just observing behaviour but also receiving instruction and guidance of how to Complete a behaviour. The other three Methods include, mastery experience, improving physical and emotionalstates and verbal persuasion. the person essentially masters a behaviour step by step Improving physical and emotional states refers to ensuring a person is rested and relaxed prior to attempting a new behaviour, Finally verbal persuasion is providing encouragement for a person to complete a task or achieve a cedrtain behaviour.

- Dr. N. B. Kongawad

Editor

TOTAL QUALITY MANAGEMENT IN SECONDARY SCHOOLS

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ABSTRACT

Total quality Management means to continuously strive to fulfil or exceed the needs and expectations of external and internal customers (Malek and Kanji, 2000) in all processes in which everyone is committed to their continuous improvement. TQM brings together the best aspects of organizational excellence by driving out fear, offering customer - driven services, doing it right the first time by eliminating error, and maintaining inventory control without waste. TQM was only articulated as a means of achieving a target, which has been set at strategic level. In last decade an increasing number of higher education institutions have applied TQM concept for effective change and sustained competitive advantage. TQM is continual organizational improvement, small and large, is always possible and is necessary for long - term survival. Opportunities for improvement are recognized primarily by continuing re-examination of all existing constraints on the way that work. Opportunities for improvement are recognized primarily by continuing re-examination of all existing constraints on the way that work is done.

Quality concept already exists in higher education (Sallis, 1992). As Sallis (1992:173) sees, "Quality is Consistent conformance to a standard." Quality Assurance Agency (QAA, UK) defined "quality is a way of describing how well the learning opportunities available to students help them to achieve their award. It is about making sure that appropriate and effective teaching; support, assessment and learning opportunities are provided for them (QAA, 2002).

Barnett(1992) suggests that there are clear general and stakeholder - related differences in how the purpose of higher education is conceived (e.g. as producer of qualified workforce, trainer for research and teaching management system).It is clear that modern universities must meet multiple goals and navigate multiple agendas. It is no longer possible to think of a university defining its purpose and ways of operating without paying attention to the views of stakeholders such as students, staff, employers, Community groups, funding bodies. It is also true that many stakeholders groups tend to have an essentially conservative view of quality and so it is the responsibility of innovative universities to lead the

discussion of quality in the context of their new operating environments.

For a school to improve the achievement of all students, especially those with disabilities, a cultural reformation must occur. TQM involves changing an organization from one that lacks quality to one that strives for quality. Such organizations will be transformed to recognize the value and the contribution of their members by emphasizing the importance of collective, rather than individual responsibility. If school leaders adopt the elements of TQM , the school culture will change to one that values quality, teamwork, and the importance of building relationships or trust and commitment. If these concepts are utilized in the day-to-day operations of the schools, the schools will be transformed to places where all children can learn and succeed in their pursuit of knowledge.

INTRODUCTION

Total quality Management means to continuously strive to fulfil or exceed the needs and expectations of external and internal customers (Malek and Kanji, 2000) in all processes in which everyone is committed to their continuous improvement. TQM brings together the best aspects of organizational excellence by driving out fear, offering customer - driven services, doing it right the first time by eliminating error, and maintaining inventory control without waste. TQM was only articulated as a means of achieving a target, which has been set at strategic level. In last decade an increasing number of higher education institutions have applied TQM concept for effective change and sustained competitive advantage. TQM is continual organizational improvement, small and large, is always possible and is necessary for long - term survival. Opportunities for improvement are recognized primarily by continuing re-examination of all existing constraints on the way that work. Opportunities for improvement are recognized primarily by continuing re-examination of all existing constraints on the way that work is done.

TQM describes an approach to quality assurance which stresses the importance of creating a culture for 'quality', which can be defined as what satisfies the

consumer; reliability; excellence; the extent to which predefined objectives have been met through fitness for purpose and conformance to specifications. TQM is a comprehensive and structured approach to organizational management that seeks to improve the quality of products and services through ongoing refinements in response to continuous feedback. It has been argued that all levels of the organization and all staff should be involved in the quality processes and objectives (Collins, 1994).

DEFINING QUALITY

Quality concept already exists in higher education (Sallis, 1992). As Sallis (1992:173) sees, "Quality is Consistent conformance to a standard." Quality Assurance Agency (QAA, UK) defined "quality is a way of describing how well the learning opportunities available to students help them to achieve their award. It is about making sure that appropriate and effective teaching; support, assessment and learning opportunities are provided for them (QAA, 2002).

Barnett (1992) suggests that there are clear general and stakeholder - related differences in how the purpose of higher education is conceived (e.g. as producer of qualified workforce, trainer for research and teaching management system). It is clear that modern universities must meet multiple goals and navigate multiple agendas. It is no longer possible to think of a university defining its purpose and ways of operating without paying attention to the views of stakeholders such as students, staff, employers, Community groups, funding bodies. It is also true that many stakeholders groups tend to have an essentially conservative view of quality and so it is the responsibility of innovative universities to lead the discussion of quality in the context of their new operating environments.

DEFINING TOTAL QUALITY MANAGEMENT(TQM)

The term of Total Quality Management (TQM) was developed by Feigenbaum, in 1961, who named it firstly as Total Quality Control (TQC). **TQM can be defined as** "the process of integration of all activities, functions and processes within an organization in order to achieve continuous improvement in cost, quality, function and delivery of goods and services for customer satisfaction". It refers to the application of quality principles to overall process and all the management functions in order to ensure total customer satisfaction. TQM implies the application of quality principles right from identification of customer needs to post purchase services.

ACCORDING TO WITCHER (1990) TQM IS COMPOSED OF THREE TERMS

Total : Meaning that every person is involved including customer and suppliers.

Quality: Implying that customer requirements are met exactly.

MANAGEMENT : Indicating that senior executives are committed.

TQM has been adopted as a management paradigm by many organizations worldwide. Quality movement in across the world starts with quality improvements project at manufacturing companies. But later it spread to other service institutions including banking; insurance, nonprofit organizations, healthcare, government and educational institutions.

ENG AND YUSOF (2003 : 64) DEFINED TQM AS

"As both a philosophy and a set of guiding principles that represents the foundation of a continuously improving organization. It integrates fundamental managements techniques, existing improvements efforts and technical tools in a disciplined approach". Total Quality Management not only transcends national boundaries it also translates from manufacturing sector into higher education (Helms et al , 2001; Ho and Wearn, 1995; Sallis, 1992).

Many educators resist the application of TQM principles to education, claiming that not enough parallels can be drawn between business and education to warrant widespread reforms. Nevertheless, those educational reformers who claim success with TQM maintain that many of its principles are directly applicable to quality in the classroom. They caution, however, that TQM is not necessarily a " recipe" for Success; rather , it provides schools with the tools necessary for organizational restructuring.

Jurrow and Barnard defined TQM as, "TQM is a system of continuous improvement employing participative management and centered on the needs of customers.

NEEDS OF TQM

1) Leadership : Using management styles that involve exploring the organizations processes. Listening to employees' problems, keeping communication goals and objectives are clear and known to all employees.

2) Commitment : Gaining the commitment of top management for the long - term through training in the basic elements and principles of the TQM philosophy , providing sufficient resources for this and gaining the commitment of employees, too.

3) Team work : Integrating all employees, so they are one giant, focussing their efforts and abilities on one target and holding themselves accountable for fulfilling their duties. Teams should be composed of people with various backgrounds and types of knowledge, who can share ideas cooperatively and learn from each other to overcome challenges.

4) Effective design : creating effective designs for the processes or services offered (e.g; the curriculum and teaching- learning processes in education) raises the overall quality. Under TQM, this is essential to keeping an organisation competitive.

5) Focusing on process : Process is vital under TQM as the sources of a quality service. Organizations need to invest in process.

KEY COMPONENTS OF TQM ARE

- 1) Employee involvement and training.
- 2) Problem solving teams.
- 3) Long-term goals and thinking.
- 4) The status of the customer
- 5) The emphasis on values and vision of the organization
- 6) The management of the processes.
- 7) The significance attached to the management of people ; human resources development.

TQM COMPONENTS IN THE HIGH SCHOOL

1) Create and maintain a constancy of purpose toward improvement of students and service, aim to create the best quality students capable of improving all forms of process and entering meaningful positions in society.

2) Embrace the new philosophy : Educational management must awaken to the challenge must learn their responsibilities and take on leadership for change

3) Work to abolish grading and the harmful effects of rating people. Focus on the learning process, not the rating process.

4) Cease dependence on testing : To achieve quality eliminating the need for inspections on a mass basis (Standardized achievement tests) by providing learning experiences which create quality performance: learning experiences that encourage creativity and experimentation

5) Work with the educational institutions from which students come: Minimize total cost of education by improving the relationship with students sources and helping to improve the quality of students coming into your system.

6) Improve constantly and forever the system of students improvement and service to improve quality and productivity in personal life and community.

7) Institute continuous training on the job for students, teachers, classified staff and administrations ; for all people connected to the human organization or community.

8) Institute leadership. The aim of supervision (leadership) should be to help people to use technology and materials to do a better job and set the place driving human creativity.

9) Drive out fear, so that everyone may work effectively for the school system. Create an environment which encourages people to speak freely and take risks.

10) Break down barriers between departments. People in teaching , special education accounting, food service, administration, curriculum development and research must work as a team. Develop strategies for increasing the cooperation among groups and individual people. Planning time will facilitate this dynamic.

11) Eliminate slogans. Exhortations and targets for teachers and students asking for perfect performance and new levels of productivity. Exhortations create adversarial relationships . the bulk of the causes of low quality and low productivity belong to the system and thus lie beyond the control of teachers and students.

12) Eliminate work standards (quotas) on teachers and students (ex. raise test scores by 10% lower dropouts by 15%).Substitute leadership, the eternal drive for quality, and joy of learning.

13) Remove barriers that rob the students, teachers and management (principles, superintendents and central office support staff) of their right to pride and joy of workmanship. This means abolition of the annual or merit rating and of management by objectives. The responsibility of all educational managers must be changed from quantity to quality.

14) Institute a vigorous program of education and self - improvement for everyone.

15) Put everybody in the community to work to accomplish the transformation. The transformation is everybody's job.

CONCLUSION

For a school to improve the achievement of all students , especially those with disabilities, a cultural reformation must occur. TQM involves changing an organization from one that lacks quality to one that strives for quality. Such organizations will be transformed to recognize the value and the contribution of their members by emphasizing the importance of collective, rather than individual responsibility. If school leaders adopt the elements of TQM , the school culture will change to one that values quality, teamwork, and the importance of building relationships or trust and commitment. If these concepts are utilized in the day-to-day operations of the schools, the schools will be transformed to places where all children can learn and succeed in their pursuit of knowledge.

- Continued on Page No. 50

A DISTRIBUTED ALGORITHM FOR ENSURING CATCH FRESHNESS IN DSR PROTOCOL

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ABSTRACT

On-demand Dynamic Source Routing protocols use route caches to make routing decisions. Due to frequent topology changes, cached routes easily become stale. In this paper, we present a novel distributed cache update algorithm to make route caches adapt quickly to topology changes without using ad hoc parameters. We define a new cache structure called a cache table to maintain the information necessary for cache updates. When a node detects a link failure, our algorithm proactively notifies all reachable nodes that have cached the broken link in a distributed manner.

1. INTRODUCTION

In mobile ad hoc networks, nodes move arbitrarily, cooperating to forward packets to enable communication between nodes not within wireless transmission range. Frequent topology changes present the fundamental challenge to routing protocols. Routing protocols for ad hoc networks can be classified into two main types: proactive and reactive (on-demand). Proactive protocols attempt to maintain up-to-date routing information to all nodes by periodically disseminating topology updates throughout the network. On-demand protocols attempt to discover a route to a destination only when a node originates a packet. Several routing protocols use on-demand mechanisms, including AODV [14], DSR [7, 8], LAR [9], TORA [13], ZRP [3]. In this paper, we focus on DSR, which operates fully on-demand. On-demand routing protocols use route caches to avoid the overhead and the latency of initiating a route discovery for each data packet. However, due to mobility, cached routes easily become stale. Using stale routes causes packet losses, _NYU Computer Science Department Technical Report TR2003-842, July 2003. Last revised: December 20, 2004. increases packet delivery latency due to expensive link failure detections, and increases routing overhead. When responding to route requests from caches is used, stale routes will be quickly propagated to other nodes, aggravating the situation. Stale routes also seriously degrade TCP performance [4].

To address the cache staleness issue, prior work [5, 10, 12] proposed to use adaptive timeout mechanisms. Such mechanisms use heuristics with ad hoc parameters to predict the timeout of a link or a route. However, predetermined choice of ad hoc parameters for certain scenarios may not work well for others. The effectiveness of heuristics is limited by unpredictable topology changes. If timeout is set too short, valid links or routes will be removed; subsequent route discoveries introduce

significant overhead. If timeout is set too long, stale routes will stay in caches. In addition, DSR uses a small cache size. Small caches with FIFO help evict stale routes but also remove valid ones. No single cache size provides the best performance for all mobility scenarios [5]. In this paper, we investigate how to make route caches adapt quickly to topology changes without using ad hoc mechanisms. When a node detects a link failure, our goal is to notify all reachable nodes whose caches contain the broken link to update their caches. To achieve this goal, we define a new cache structure called a cache table and

present a distributed cache update algorithm. In a cache table, a node not only stores routes but also maintains the information necessary for cache updates. Each node maintains two types of information for each route: (1) how well the routing information is synchronized among nodes on the route, and (2) which neighbor node has learned which links through a ROUTE REPLY. Thus, for each cached link, a node knows which neighbor nodes have cached that link. When a link failure is detected, the algorithm notifies the neighborhood nodes that have that link in their caches. When a node receives a notification, the algorithm notifies selected neighbors. Therefore, the broken link information will be quickly propagated to all the reachable nodes that have the broken link in their caches.

We compare our algorithm with DSR with path caches and with Link-MaxLife [5], an adaptive timeout mechanism for link caches. We do not use promiscuous mode, which is an optimization for DSR [8]. Through detailed simulations, we show that our algorithm significantly outperforms DSR with path caches, improving packet delivery

ratio by up to 13% for 50 node and 34% for 100 node scenarios, reducing packet delivery latency by up to 30% for 50 node and 25% for 100 node scenarios, and achieving 50% reduction in normalized routing overhead

for 100 node scenarios. Compared with Link-MaxLife, our algorithm improves packet delivery ratio by up to 35%. The rest of this paper is organized as follows. In Section 2 we give an overview of the DSR. In Section 3 we present the definition of a cache table and the distributed cache update algorithm. We present an evaluation of the algorithm in Section 4 and discuss related work in Section 5. Finally, in Section 6 we present our conclusions.

2. DSR : DYNAMIC SOURCE ROUTING

DSR consists of two on-demand mechanisms: Route Discovery and Route Maintenance. When a source wants to send packets to a destination to which it does not have a route, it initiates a Route Discovery by broadcasting a ROUTE REQUEST. A node receiving a ROUTE REQUEST checks whether it has a route to the destination in its cache. If it has, it sends a ROUTE REPLY to the source including a source route, the concatenation of the source route in the ROUTE REQUEST and the cached route. Otherwise, it adds its address to the source route in the packet and rebroadcasts the ROUTE REQUEST. When the ROUTE REQUEST reaches the destination, the destination sends a ROUTE REPLY containing the source route to the source. When forwarding a ROUTE REPLY, a node stores the route starting from itself to the destination. Upon receiving the ROUTE REPLY, the source caches the source route. In Route Maintenance, a node forwarding a packet is responsible for confirming that the packet has been received by the next hop. If no acknowledgement is received after the maximum number of retransmissions, this node will send a ROUTE ERROR to the source, indicating the broken link. Each node receiving a ROUTE ERROR removes from its cache the routes containing the broken link. Besides Route Maintenance, DSR uses two mechanisms to remove stale routes. First, a source node piggybacks the last known broken link information on the next ROUTE REQUEST (called GRATUITOUS ROUTE ERROR) to clean more nodes. Second, it relies on heuristics: a small cache size with FIFO replacement policy for path caches, and adaptive timeout mechanisms for link caches [5], where the timeout of a link is predicted based on observed link usages and breakages. Among the optimizations proposed in [11], we will not use GRATUITOUS ROUTE REPLIES and tapping. Both of them rely on promiscuous mode, which disables the network interface's address filtering function and thus causes the routing protocol to receive all packets overheard by the interface.

3. THE DISTRIBUTED CACHE UPDATE ALGORITHM

In this section, we first discuss the adverse effects of stale routes. We then present an overview of our caching strategy. After describing the definition of a cache table,

we use examples to explain two algorithms used for maintaining the information for cache updates. Finally, we present the cache update algorithm with examples and a concise description.

3.1 THE IMPACT OF STALE ROUTES

The adverse effects of stale routes can be summarized as :

- 1) Causing packet losses, increasing packet delivery latency and routing overhead. These effects will become more significant as mobility, traffic load, or network size increases, because more routes will become stale and/or stale routes will affect more traffic sources.
- 2) Degrading TCP performance. Since TCP cannot distinguish between packet losses caused by route failures from those caused by congestion, it will falsely invoke congestion control mechanisms, resulting in the reduction in throughput.
- 3) Wasting the energy of source nodes and intermediate nodes. If stale routes are not removed quickly, TCP will retransmit lost packets still using stale routes. We refer to a route in a node's cache as pre-active, if it has not been used; active, if it is being used; post-active, if it was used before, but now is not. It is not necessary to detect whether a route is active or post-active, but these terms help understand the cache staleness issue. It is easy to detect a stale route if it is active, but stale pre-active and post-active routes will not be detected until they are used. Therefore, they are the major sources of cache staleness.

3.2. OVERVIEW

Fast cache updating is important for reducing the adverse effects of stale routes. It is also necessary to constrain cache update notifications to the nodes that have cached a broken link in order to avoid the overhead of notifying other nodes. Thus, our goal is this: when a node detects a link failure, all reachable nodes whose caches contain the broken link will be notified about the link failure.

To achieve this goal, we make use of the information obtained from route discoveries and data transmission. We define a cache table to gather and maintain the information necessary for cache updates. Each node maintains two types of information for each route in its cache table: how well the routing information is synchronized among nodes on a route, and which neighbor node outside a route has learned which link of the route. By keeping such local information, a node knows which neighbor node needs to be notified about a broken link. A node receiving a cache

update notification uses the local information kept in its cache table to determine and notify the neighbor nodes that have cached the broken link. Thus, a broken link information will be quickly propagated to all reachable nodes whose caches contain that link.

3.3. THE DEFINITION OF A CACHE TABLE

A cache table has no capacity limit and thus its size changes as needed. Each entry of a cache table contains four fields :

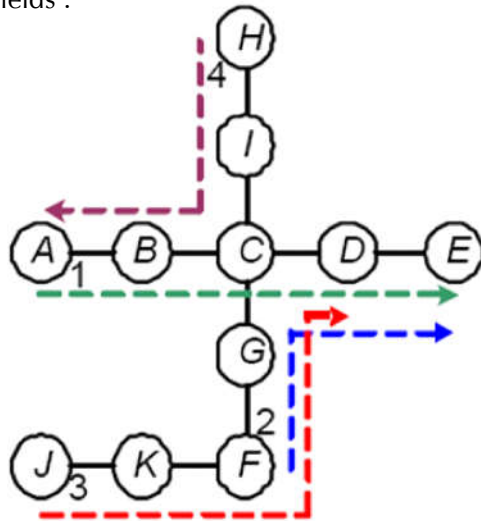


Figure 1: An Example of a Network with Four Flows

1) Route : It is a route a node learns. A node first stores the links from itself to a destination from a ROUTE REPLY and later completes the sub-route stored before by adding upstream links from the first data packet. If no route in the table is a sub-route of the source route, it stores the complete source route from the data packet.

2) SourceDestination : It is the source and destination pair.

3) DataPackets : It records whether a node has forwarded 0, 1, or 2 data packets using the route. This field indicates to what extent the routing information is synchronized among nodes on the route. It is 0 when the node stores downstream links from a ROUTE REPLY; it is incremented to 1 when the node forwards the first data packet; and it is incremented to 2 when the node forwards the second data packet.

4) ReplyRecord : When the node informs a neighbor of a sub-route through a ROUTE REPLY, it records the neighbor and the links used as an entry. If some entry contains a broken link, a node knows which neighbor it needs to notify about the link failure. This field has no capacity limit and thus its size changes as needed.

3.4. INFORMATION COLLECTION AND MAINTENANCE FOR CACHE UPDATES

During route discoveries and data transmission, we

use two algorithms to collect and maintain the information necessary for cache updates: addRoute and findRoute. We use a network shown in Fig. 1 in our examples. We will use S-D for Source Destination, dP for Data Packets, and reply Rec for Reply Record in the headers of tables describing the content of caches. Initially, there are no flows and all nodes' caches are empty.

Node A initiates a route discovery to E and a ROUTE REPLY is sent from E to A. Upon receiving a ROUTE REPLY, each intermediate node creates a new entry in its cache (addRoute: 6-11 in the Appendix). For instance, node C creates an entry consisting of four fields :

- (1) a route containing downstream links: CDE;
- (2) the source and destination pair: AE;
- (3) the number of data packets it received from the source node A: 0;
- (4) which neighbor will learn which route: B will learn CDE.

3.5. THE DISTRIBUTED ADAPTIVE CACHE UPDATE ALGORITHM

CONCISE DESCRIPTION

A node learns a broken link either by detecting it itself or through a cache update notification from another node. In either case, the cache update algorithm is started reactively to examine each entry of the cache table. For each route containing a broken link, the algorithm determines a set of neighborhood nodes it needs to notify about the broken link, its upstream and/or downstream neighbors as well as other neighbors outside the route. Finally, the algorithm produces a notification list, which includes nodes to be notified about the broken link and routes to reach those nodes. A node sends cache update notifications through ROUTE ERRORS.

In each route containing a broken link, the link is in the forward direction if the flow using that route crosses the link in the same direction as the flow that has detected the breakage; otherwise it is in the backward direction. For these two types of links, the operation of the algorithm is symmetric. When a node detects a link failure, it examines each entry of its cache. If a route contains the broken link in the forward direction (cacheUpdate: 8-18), then the algorithm does the following steps :

- 1) If DataPackets is 2 or 1, then upstream nodes (if any) need to be notified, but only the upstream neighbor is added to the notification list.
- 2) If DataPackets is 2, or 1 and the route being examined is different from the source route in the packet, then downstream nodes need to be notified. The algorithm tries to find a shortest path to reach one of the downstream nodes. For both cases, the

first data packet has traversed that route and thus all downstream nodes have cached the broken link.

- 3) If DataPackets is 0, there is no upstream node and no downstream nodes need to be notified. If a route contains the broken link in the backward direction (cacheUpdate: 19-28), which implies that the current node is the first downstream node, then its downstream neighbor is added to the list. Also, the algorithm tries to find a shortest path to reach one of the upstream nodes.

If a node learns a broken link through a notification from another node, it knows which node it needs to notify about the link failure based on its position in a route containing the broken link (cacheUpdate: 29-43).

If any entry in the ReplyRecord field contains a broken link, then the node adds the neighbor that got the sub-route containing the link to the list. This field needs to be checked whether dataPacket is 0, 1, or 2 and whether the link is in the forward or backward direction.

In this way, all reachable nodes that have cached the broken link will learn the link failure and update their caches. If a node cannot find a route to reach any downstream node, these nodes will learn the broken link when the first data flow detects the broken link in a reverse direction. Then nodes that got routes containing the broken link from these downstream nodes will also know the link failure and update their caches. Thus, proactive cache updating is triggered fully on-demand.

3.6. SOME IMPLEMENTATION DECISIONS

In order to reduce the duplicate error notifications to a node, we attach a reference list to each ROUTE ERROR. The node detecting a link failure becomes the root node. It initializes the reference list to be its notification list; each child only sends cache update notifications to nodes not on this list and updates this list by adding nodes on its own notification list.

When using the cache update algorithm, we also use a small list of broken links like a negative cache to prevent a node from being re-polluted by the in-flight stale routes. Its size is set to 5 and timeout is set to 2 s for all scenarios used in simulations. This component is not part of the algorithm, which does not use any ad hoc parameter. This list can be replaced by a non-ad-hoc technique proposed by Hu and Johnson [6].

4. RELATED WORK

DSR's cache performance was first analyzed by Maltz et al. [11]. Hollan and Vaidya observed [4] that stale routes seriously affect TCP performance. Perkins et al. [15] pointed out the impact of stale routes on DSR's performance. Hu

and Johnson [5] studied design choices for cache structure, cache capacity, and cache timeout. They proposed the link cache structure and several adaptive link timeout algorithms. Marina and Das [12] proposed wider error notification and timer-based route expiry. Under wider error notification, a node receiving a ROUTE ERROR will rebroadcast it, but only if there is a cached route containing the broken link and that route was used before to transmit data packets by that node. Thus broken links which are frequently propagated in ROUTE REPLIES and cached by nodes for future use will not be removed. Moreover, some nodes that have cached broken links may not receive notifications, since broadcast is unreliable. Under timer-based expiry, the average timeout is assigned to all the routes based on some broken routes. While this works well when routes break uniformly, mobility may not be uniform in time or space. Lou and Fang [10] proposed an adaptive link timeout mechanism in which the lifetime of a link is adjusted based on the real link lifetime statistics. Hu and Johnson [6] proposed to use epoch numbers for preventing a node from re-learning a stale route that it previously found out was broken.

5. CONCLUSIONS

We have presented a novel solution to the cache staleness issue of DSR. We define a cache table to collect and maintain the information necessary for cache updates. When a node detects a link failure, our distributed cache update algorithm proactively notifies all the reachable nodes whose caches contain the broken link to update their caches, using local information kept by each node and relying on cooperative update propagation. The algorithm does not use ad hoc parameters, thus making route caches fully adaptive to topology changes. Through detailed simulations, we show that the algorithm significantly improves packet delivery ratio and reduces packet delivery latency compared with DSR with path caches. It also considerably outperforms Link-Maxlife in packet delivery ratio. Our results lead to the following conclusions :

- 1) Due to unpredictable topology changes, heuristics cannot accurately predict timeouts. Proactive cache updating is more efficient than adaptive timeout mechanisms in invalidating stale routing information.
- 2) The effectiveness of predetermined choices of ad hoc parameters in caching strategies depends on scenarios. It is important to make route caches dynamically adapt to changing network characteristics.

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DIGITAL DIVIDE : BRIDGING THE GAP

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1. INTRODUCTION

The Information and Communication Technology (ICT) is one of the important driving forces for modern civilization. The rapid development and proliferation of ICTs has accelerated the economic and social change (Nandi, 2002), across all areas of human activity worldwide and continues to do at the rapid pace. ICTs enable interactive communication unhindered by distance, volume, medium or time and also reduce the cost of co-ordination (Fletcher et al, 2000), communication and information processing (Dean, 2002; Gordon, 2000). ICTs hold great promise in derive for development and poverty reduction in India.

ICTs have radically changed the way of doing business. Internet and its enabled business technologies like e-commerce have opened up vast business avenues and transformed the whole business world into a global village. Further, it is expected that ICTs will play a crucial role in the socio-economic development process, and change the pattern of people's economic models and lives. But, the potential to exploits the benefits of ICTs largely depends on the access and adoption of these technologies. In fact, the status of ICT adoption of an economy is an indicator of its potentiality to exploit the economic opportunities affordable by the new technologies-more generally, its prospects for the transition to the 'new economy'. But, as expected the adoption of ICTs vary significantly across countries. That leads to a gap, which hinders the uniform development of the nation in all sphere of life.

DIGITAL DIVIDE

The notion of a digital divide gained attention in the 1990s with recognition that some people and institutions were not going online or were not going onto broadband. The concept of a "digital divide" between technological "haves" and "have-nots" has been a useful tool in efforts to bring greater, more equal access to powerful new information and communication technologies like the Internet. The term 'Digital Divide' is used to describe situations in which there is a gap in access to the use of ICT devices measured by, for example the number of fixed line phones per inhabitants, or the number of mobile users or the internet connections in the population. The term 'digital divide' refers to "the gap between individuals, households, businesses and geographic areas at the different socio-economic levels with regard to their

opportunities to access information and communication technologies (ICTs) and their use of Internet".

DIGITAL DIVIDE : TYPES

'Digital divide' essentially describes three distinctive divides: a geographical digital divide (between regions and countries), a social digital divide (between social classes), and an upgraded digital divide (between technology and humans). Norris (2001); Mark, (2003) and Branko (2005) suggest that there are at least three major divides :

1. A global divide between the developed and undeveloped worlds
2. A social divide between the information rich and the information poor
3. A democratic divide between those who do and those who do not use the new technologies to further political participation

Thus digital divide can be defined as economic, social or cultural deprivation generated by missing ICT access and skills. In the modern knowledge- and information-based world, economic opportunities, such as employability, depend on ICT access and skills. ICTs, however, also play an increasingly important role in all social relationships, ranging from political participation to connecting local communities, friends and the family. Second, in the global and culturally diversified world, ICTs are also increasingly important for access to cultural resources and expression. Third, the definition also replaces traditional technology-focused characterizations of digital divide, noting that lack of technology, is not always a problem. It is clear that technology remains inert and useless with knowledge and capabilities to use them, and when they are embedded in social without necessary human skills and competences. Technologies become real when they are combined practices.

DIGITAL DIVIDE IN INDIA

ICT infrastructure is the backbone of modern society. It is the biggest enabler of change and process reforms with minimum resistance. Various studies (Lawrence and Lee, 1999; Leizero, 2000; Pastor et al, 2004; Norris, 2000; Sumanjeet, 2006) revealed that good governance is not possible without the ICTs. The governments to deliver its services at the locations convenient to the citizens are increasingly using the information and communication technologies. Further, it brings effectiveness, efficiency and

transparency is the system. Therefore, the governments around the world are busy in developing the ICTs infrastructure. India is one of the countries where telecommunication development activities have gained momentum in the past decade or so. Efforts have been made from both governmental and non-governmental platforms to enhance the telecommunication infrastructure. The idea is to help modern telecommunication technologies to serve all segments of India's cultural diverse society.

The gap of digital divide is significant between the rural and urban India (Dasgupta et al, 2002; Nath, 2001; Singh, 2007; Mahajan, 2003; Dutta, 2003). The major metropolises are at par with some of the developed countries, but rural areas in states like eastern Bihar and Orissa are worse off.

INTERNET DIVIDE

Internet came to India in the early 1990. Videsh Sanchar Nigam Limited (VSNL) introduces Internet in India via dial up in the 6 cities on August 14, 1995. By the end of 1998, after three years of government monopoly, there were barely 150,000 Internet connections in India.

According to the survey conducted by Internet and Mobile Association of India (IAMAI), Internet users are estimated at 150 million as on December 2012 and, with a growth predicted to reach more than 1 billion in the next five years.

But data shows that Internet seems to be on a move in the metros of India and not the buzzword for small towns too. Today almost 105 million Internet users in India are belonging to urban population. Rural population constitutes only 45 million. This disparity among the rural and urban Internet users is very high.

Interestingly, among 75% of online audience are between age group of 15-34 years. India is one of the youngest online demographic globally.

DETERMINANTS OF DIGITAL DIVIDE IN INDIA

From the above discussion it is clear that there is huge gap of digital divide between rural and urban India. However, this gap varies from State-to-State. In some States like North East, Uttranchal, Bihar, Jharkhand, Orissa and Anadaman and Nicobar Island the gap of digital divide is really very significant, in some other states it is narrow like Punjab, Maharashtra and Kerala. In some cities like Delhi, Mumbai, Kolkata, Banglore, Hyderabad, Noida etc, ICTs adoption rate is very high, whereas in some other cities like, Patna, Lucknow, Ahemdabad (even these are the capital of States) etc, adoption rate is very low. The undeniable fact is that there is noticeably problem of digital divide in India. It is a massive problem and a very complex

problem too. It is not just about people who have access and those that do not; it is not just about haves and have-nots. It is about people becoming knower and know-nots; and doers and do-nots; those who can communicate with the rest of the world and those that cannot. In this light it is also important to find out some of the important reasons behind the digital divide in India.

There are many reasons, which can be held responsible for digital divide in India. Poverty, unemployment, age and education are the some of the major factors.

A Nation Online Survey (NTIA, 2002) found computer and Internet use correlate with poverty (family income), employment status, and educational attainment. Even age is also a major factor (Lenhart, 2000). Rural India has more than 70 per cent of Indian population. 75% of the poor are in rural areas; most of them are daily wages, self-employed householders and landless labourers.

The better educated are statistically more likely to have and use connected PCs. In particular those with college degrees or higher, are ten times more likely to have access. Literacy rate is high in the urban India (79.9 percent) whereas it is only 58.7 percent in the rural India. Overall literacy rate in India is 64.8 percent. There is also huge difference in male (75.3 percent) and female literacy rate (53.7 percent).

Another important reason of digital divide in India is knowledge divide. Knowledge divide is directly related with digital divide. More educated people with computer knowledge and English language are able to access new technologies. Rural India had 368 million literate people out of whom only 63 million were found to be English speaking as on March 2008. Internet use is primarily associated with a large section of the English-knowing urban population-though they account for only 31 per cent of the total urban population of 250 million-as many, as 84 per cent of them are PC

literate. Internet penetration extended to only 0.6 per cent of the population in rural areas, with the number of active Internet users estimated at 3.3 million.

POLICY FOR ADDRESSING THE CHALLENGES IN BRIDGING THE DIGITAL DIVIDE

Despite India taking significant steps towards acquiring competence in information and technology, the country is increasingly getting divided between people who have access to technology and those who don not. India has around half a million software developers and is second only to the US, but 70 per cent of the Indian population which live in 300,000 Indian villages do not have access to any form of technology, 26 per cent of the population lies below the poverty line and 35 per cent illiterate. The

challenge in front of the Indian government is to bring down this digital divide and ensure development and adoption of technology. The government has made encouraging steps to bridge the gap of digital divide in India. Most of the initiatives are directed towards bridging the gap of rural and urban digital divide. The Indian government has passed Information Technology Act, 2000 to make e-commerce and e-governance a success story in India. Recognizing the potential of Broadband service in growth of GDP and enhancement in quality of life through societal applications including tele-education, tele medicine, e-governance, entertainment as well as employment generation by way of high-speed access to information and web based communication;

The government should adopt the following policy to bridge the gap of digital divide in India :

- Educationists suggest that relationship between education and ICT is critical. International evidence suggests (Pluss, 2004; Rheingold, 2000; Smith, 1998) that education is strong complement to use of technologies like Internet. Like many other developing countries, the main emphasis of Indian government is boost primary education that yields the higher rate of social returns. But, to bridge the gap of digital divide government should introduce some innovative policy measures to encourage students to go for further education in the rural areas.
- There is need to promote technologies which are best suited for the rural India. For example to bridge the gap of digital divide in its real sense there is need to increase PC penetration. The reason is very simple; mobile cannot do everything a PC can. But, mobile are cheaper, more portable and their extended battery life is suited to regions where access to electricity is lacking or non-existent. The infrastructure needed to connect wireless devices to the Internet is easier and less expensive to build. There are also no learning curve, no literacy barrier and no technical-support challenges to overcome. There are no costly and burdensome applications to load, maintain and update. Thus, mobile is best suited for the rural people. Therefore, not only government but also private players should encourage mobile penetration in India.
- The main barrier in Indian rural society is the fact that people do not associate the benefits of the Internet and other communication technologies with their personal needs, believing that "computers are not for them". As a result they behave very passively towards the ICTs. In order to bring 'passive people' to the Internet and ICTs, a broader understanding of the 'ICTs for everyone' notion has to be promoted.
- There is need to develop innovative strategies to address constraints the world's women face in their access to and use of ICTs. For women, content is directly linked to use. If women are to be able to make use of the Internet for income generation, education or advocacy, there must be more relevant content. This includes both substance and languages. Women are producers as well as consumers of information and knowledge and this is an important area of support.
- Like many other developing countries, in India as well great attention has been paid to ICT training in the recent years. Government schools across the country are making use of the computer literacy programmes funded by giant companies like Microsoft Corporation and IBM. In an ironical twist, it is the world's largest technology companies who have taken it upon themselves to help bridge the "digital divide" in India. Microsoft Corp, the world's largest software maker, has signed MoUs with many governments around the country, and has committed \$40 million to promote computer literacy among disadvantaged kids in rural areas. The Confederation of Indian Industry (CII), and the Global Leaders of Tomorrow (GLT) of the World Economic Forum (WEF), have launched an initiative called 'Shiksha India' in December 2001 during the India Economic Summit primarily to bridge the digital divide and promote better quality education in Indian Schools. It is expected that these project will undoubtedly play a great role in overcoming the lack of interest and will help in bridging digital divide.
- Psychological obstacles may be the unwillingness "to reveal one's lack of skills". Therefore the effectiveness of the training programmes will have to be evaluated (to make sure that the trainees have become convinced Internet users) and improvements made where necessary.
- Promotion of telecommunication infrastructure in the rural India is the most important condition for bridging the rural-urban digital divide and Indian government can play a very significant role in creating the IT infrastructure in the rural India. A special expenditure should be marked for bridging the digital divide among the regions. It is clear for international experience (Rowan et al, 1998; Wahid, 2006; Mwesige, 2004; Mosse and Sahay, 2003) that bridging the digital divide is impossible without additional expenditure from the national budget. India should learn from China. In China, government has not only invested heavily in the creation of IT infrastructure, but also in the universal telecommunication access in rural and remote areas.

- Linguistic issues are of major policy importance in India, given the dominance of English language in software and Internet. The desire to promote cultural diversity is one reason behind interest in linguistic issues, but so is the avoidance of social exclusion among non-English speaking population of India. Hence, these matters are critical to various aspects of digital divide. How can they be addressed? A bilingual, approach may be best solution for such constrain.

CONCLUDING REMARKS

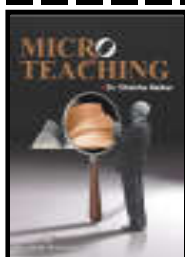
The explosive development of ICT, its applications, and the emergence of a global information society are changing the way people live, learn, work and interact. Enhanced access to knowledge is rapidly becoming a potent tool for empowering the people and communities in their quest for new opportunities, dignity and a better life. The divide between technology's haves and have-nots threatens the gaps between the rich and poor, within and among countries. Unfortunately, in India all people have access to the Internet and ICT, and an amazingly large number of people especially from the rural areas does not have abilities to use the ICTs in a proper way and, therefore can not draw the advantages from its usage. The issues of "digital divide is posing a Herculean task before the policy makers to provide the maximum benefits to the stake holders.

The educational system in our nation also has been slow to achieve the set target framed by various commissions and committees and schemes launched from time to time. The lack of sound ICT strategies and policies in India is the main cause of these troubles. Added to this, Inadequate Internet and telephone connectivity to India's rural areas, where more than 70 percent of India's population lives, is a key challenge for a number of government agencies, NGOs and multilateral aid agencies. The corporate sector too is discovering that bridging this digital divide could translate into new market opportunities. Therefore, obstacles such as illiteracy, lack of skills, and infrastructures in rural areas must be tackled if India is to diminish the gap of digital divide.

As far as future of digital divide is concerned in India, it is really very difficult to predict it. But, it is true that the present situation in India is not alarming (if not highly satisfactory). The gap of digital divide is getting narrower. It is expected the government policies and public private partnership will help in bridging the digital divide. But, it is not possible to completely bridge the gap of digital divide in India, as gender, age, culture, language, sex, etc. are all fundamental components that often affect daily activities and experiences including the virtual world.

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A GEOGRAPHICAL ANALYSIS OF TOURISM IN KARNATAKA

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ABSTRACT

The present paper aims to study the spatial point of perception pertaining to the development and issues of Tourism in Karnataka. The preservation of the natural environment, world heritage sites, the prudent use of natural resources, the environmental factor, rich flora and fauna, wildlife sanctuaries etc. Karnataka with its aesthetic beauty, historical monuments, temples, unique architecture, fairs and festivals and above all hospitable people with a rich cultural heritage has become a firm favorite to the tourists around the world. Moreover, it is the top IT hub of the world and a medical tourism destination too plotted on the globe.

INTRODUCTION

Today, Tourism industry is considered as a priority sector across the globe, the tourism and travel industry plays a prominent role in uplifting the socio-economic conditions of the dependants of the tourism. Tourism includes a wide range of activities such as transportation, accommodation, catering, tour operation, travel agency and financial services. It drives other sector development too, such as construction, infrastructure, arts and crafts etc. Moreover tourism generates a wide range of job opportunities from unskilled to highly skilled, both through direct employment in tourist facilities and indirect employment with suppliers.

Tourism in India is a large industry. The World Travel and Tourism Council calculated that tourism generated \$121 billion or 6.4% of the nation's GDP in 2011. It was responsible for 39,3 million jobs, 7.9% of its total employment. The GDP of the tourism sector has expanded 229% between 1990 and 2011. The sector is predicted to grow at an average annual rate of 7.7% in the next decade. In a 2011 forecast the World Travel and Tourism Council predicted the annual growth to be 8.8% between 2011 and 2021. This gave India the fifth rank among countries with the fastest growing tourism industry. India has a large medical tourism sector which is expected to grow at an estimated rate of 30% annually to reach about ₹ 9,500 crore by 2015.

In the year 2011, there were nearly 6.29 million foreign tourist arrivals in India, up by over 8% from the year 2010 when 5.78 million foreign tourists arrived in India. Domestic tourist visits to all states and Union Territories numbered 747.70 million. The majority of foreign tourists come from the United States (16%) and the United Kingdom (12.6%). In 2011 Maharashtra, Tamil Nadu and Delhi were the most popular states for foreign tourists. Domestic tourists visited the states Uttar Pradesh, Andhra Pradesh and Tamil Nadu most frequently.[4]

Chennai, Delhi, Mumbai and Agra have been the four most visited cities of India by foreign tourists during the year 2011. Worldwide, Chennai is ranked 41 by the number of foreign tourists, while Delhi is ranked at 50, Mumbai at 57 and Agra at 65.

The Travel & Tourism Competitiveness Report 2011 ranked the price competitiveness of India's tourism sector 28th out of 139 countries. It mentions that India has quite good air transport (ranked 39th), particularly given the country's stage of development, and reasonable ground transport infrastructure (ranked 43rd). Some other aspects of its tourism infrastructure remain somewhat underdeveloped however. The nation has very few hotel rooms per capita by international comparison. The Indian government has identified a shortage of 150,000 hotel rooms, with most of the undersupply in the budget sector.

The Ministry of Tourism designs national policies for the development and promotion of tourism. In the process, the Ministry consults and collaborates with other stakeholders in the sector including various Central Ministries/agencies, state governments, Union Territories and the representatives of the private sector. Concerted efforts are being made to promote new forms of tourism such as rural, cruise, medical and eco-tourism. The Ministry also maintains the Incredible India campaign.

TABLE-1. FOREIGN TOURIST ARRIVALS IN INDIA, 2000-2010

Year	FTA's (in millions)	Annual growth (%)
2000	2.64	6.7
2001	2.53	-4.2
2002	2.38	-6.0
2003	2.72	14.3
2004	3.45	26.8
2005	3.91	13.3
2006	4.44	13.5
2007	5.08	14.3

2008	5.28	4.0
2009	5.16	-2.2
2010 (provisional estimate)	5.58	8.1

Source : Government of India, Tourism Annual Report-2010-11, p.66, India Tourism, Incredible India

TABLE-2 : FOREIGN EXCHANGE EARNINGS FROM TOURISM IN INDIA,

2000-2010 Year	Fee (in million, US \$)	% change over previous year
2000	3460	15.0
2001	3198	-7.6
2002	3103	-3.0
2003	4463	43.8
2004	6170	38.2
2005	7493	21.4
2006	8634	15.2
2007	10729	24.3
2008	11747	9.5
2009	11394	-3.0
2010 (advance estimates)	14193	24.6

Source : Government of India, Tourism Annual Report-2010-11, p.66, India Tourism

India's rich history and its cultural and geographical diversity make its international tourism appeal large and diverse. It presents heritage and cultural tourism along with medical, business and sports tourism. Karnataka has been ranked as fifth most popular destination for tourism among states of India. It has the highest number of national protected monuments in India, at 507.

Kannada dynasties like Kadambas, Western Gangas, Chalukyas, Rashtrakutas, Hoysalas, Vijayanagaras and the Kingdom of Mysore ruled from what is today Karnataka. They built great monuments to Buddhism, Jainism and Hinduism. These monuments are preserved at Badami, Aihole, Pattadakal, Mahakuta, Hampi, Lakshmeshwar, Sudi, Hooli, Mahadeva Temple (Itagi), Dambal, Lakkundi, Gadag, Belur, Halebidu, Sringeri, Shravanabelagola, Sannati, Nanjangud, Mysore, Nandi Hills, Kolar, Mudabidri, Gokarna, and many more. Notable Islamic monuments are present at Bijapur, Bidar, Gulbarga, Raichur and other part of the state. Gol Gumbaz at Bijapur, has the second largest pre-modern dome in the world after the Byzantine Hagia Sophia. Karnataka has two World heritage sites, at Hampi and Pattadakal.

Karnataka is famous for its waterfalls. Jog falls of Shimoga District is one of the highest waterfalls in Asia. This state has 21 wildlife sanctuaries and five National parks and is home to more than 500 species of birds. Karnataka has many beaches at Karwar, Gokarna, Murdeshwara,

Surathkal. Karnataka is a rock climbers paradise. Yana in Uttara Kannada, Fort in Chitradurga, Ramnagara near Bengaluru district, Shivganga in Tumkur district and tekal in Kolar district are a rock climbers heaven. Utsav Rock Garden in Shiggaon, Uttar Kannada.

Karnataka is situated in the Southern part of India which spreads over the Deccan Plateau. Karnataka is the eighth largest State in India both by area and population. The State is situated between 74 Degree E longitudes and between 11 degree N and 18 degree N latitudes. The topography of Karnataka is largely as reflection of the geology of the state. The Sahyadri Ghats are covered with evergreen forests. They drop abruptly towards the Arabian Sea, forming a natural barrier between the plateau and the coastal regions. The wild life sanctuaries at Bandipur, Nagarhole and Dandeli, the Ranganathittu Bird Sanctuary 5 k.m. from Srirangapatna which is itself a well known tourist center, hill stations like Nandi Hills and Kemmannagundi and Mercara, beach resorts like Karwar, Ullal, Malpe and Maravanthe, the world famous Brindavan Gardens at Krishnarajasagara, the monolithic statue of Gommateshwara at Sharavanabelagola, Gol Gumbaz Bijapur. The Jog Falls and other waterfall at Shiva Samudram, Magod, Unchelli or Lushington near Siddapur, Lalguli at Yallapur and other places indicate the variety and richness of the attractions that Karnataka State holds out to the visitors.

Karnataka State attracted 3.83 Crores tourists visited during the year 2010 and its share in the total 5.2%. The Government of Karnataka expects 776.83 Lakhs domestic tourists and 5.26 foreign tourists by the year 2020. With the largest number of institutes in hotel management and catering technology, the State has the large pool of human resources. The sector is attracting significant investment by domestic and global players, as infrastructure is being ramped up to meet the needs of the growing tourist activity.

Government of Karnataka has issued a new policy on tourism to this effect. It has been planned to turn more tourism traffic to the State and to make the state as the principal economic activity in the forthcoming years. Tourism is generally considered a clean industry, one that is based on hotels, restaurants, shops and attractions, instead of factories. But, the impact of tourism can be vast and can also degrade the environment. Tourists generate the wastes and also responsible for pollution. Litter has become a major problem in Karnataka and there is no infrastructure to deal with it.

The situation in Karnataka is complex as for use of resources and institutional responses are concerned, the large number of stakeholders are involved in tourism; the Luxury Hotels, family-run Guest Houses are operating and cater to provide the accommodations are creating problems and are also responsible for deteriorating the resources.

Hence, there is a need of the hour to promote tourism and redress the issues related to the tourism.

STUDY AREA

Karnataka has an area of 191,976 square kilometres (74,122 sq mi), or 5.83% of the total geographical area of India. It is the eighth largest Indian state by area. With over 61 million inhabitants (2011), Karnataka is the ninth largest state by population, comprising 30 districts. Latitude: 15° 00' N

Longitude : 75° 00' E Kannada is the most widely spoken and official language of the state. Population 2011 is 61,130,704 density is 320/km The two main river systems of the state are Krishna and its tributaries (Bhima, Ghataprabha, Vedavati, Malaprabha, and Tungabhadra) in the north, and the Cauvery and its tributaries (Hemavati, Shimsha, Arkavathi, Lakshmana Thirtha and Kabini) in the south. Both these rivers flow eastward and fall into the Bay of Bengal. The literacy rate is 66.6% with 76.1% of males and 56.9% of females being literate.[2] 83% of the population are Hindu, 11% are Muslim, 4% are Christian, 0.8% are Jains, 0.7% are Buddhist, and with the remainder belonging to other religions.

OBJECTIVES

The specific objective to analyse the :

1. To analyse the topographical features of tourism in Karnataka
2. To understand the natural, heritage, flora and fauna, cultural issues with regard to tourism of the Study area
3. To deal and explain the aesthetic beauty of the tourist spots
4. To appreciate the strategies involved in the issue of apt development of tourism in the study area

HYPOTHESIS

It is hypothesized that

1. The tourist spots attracts the tourists to exhibit the aesthetic beauty
2. The infrastructural facilities are responsible for spending the leisure time and enjoying a pleasure by the tourist
3. The tourism industry spoils the natural beauty and create problems to the locals

DATABASE AND METHODOLOGY

The present paper is an outcome of exhaustive secondary sources of information / data. The information related to tourist spots has been collected from the Karnataka State Tourism Development Corporation

(KSTDC). Arrivals of tourists of both domestic and international, revenue earned through tourism, infrastructural development for development of tourism, infrastructural development for development of tourism in the State etc have also been collected from Directorate of Planning and Statistics. The collected information has been compiled and prepared the tables and charts for analysis.



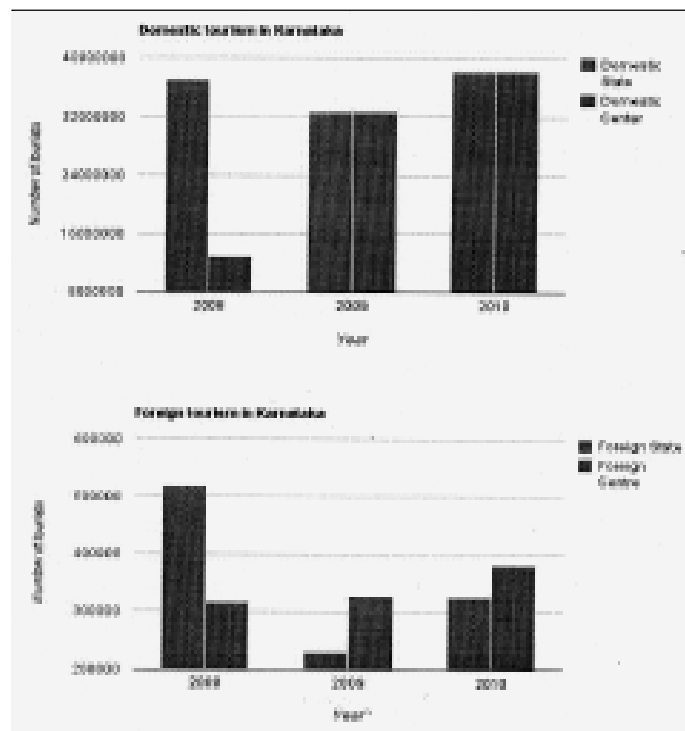
GROWTH AND DEVELOPMENT OF TOURISM IN KARNATAKA

Karnataka has rich cultural heritage, the concept of tourism and tourism industry. This industry has given ample scope for generating employment opportunity, along with other industries like hotel and transportations are also developed, this has happened due to development of infrastructural facilities. The emerging hotel industry, transport sectors are other sectors are benefiting through the tourism industry. As a result, the tourism is prospering in the study region. The domestic tourism is more active than the international tourism. Traditionally, Mysore was well known for its beautiful gardens, Brindavan, KRS Dam, Museums, Palaces, Zoo. World Heritage sites such as Hampi, Pattadakal, Aihole, Badami, Belur and Halabid showcases the rich heritage culture that the State has. Coastal Areas, Karwar to Mangalore there are beaches such as Malpe, Mangalore Port. Interiors like Jog Falls, Wildlife Sanctuaries like Nagarhole, Bannerghatta, Bandipur, Ranganathittu. Karnataka is bestowed with rich flora and fauna. Concentrating in urban areas, international airport connecting to all major cities in the world. Bangalore is the IT Capital of the world and major industries like

Biotechnology, manufacturing sectors, medical destination, Innovative Film City, WonderLa Water Theme Park, Parks have enhanced the reputation of Karnataka and has made Karnataka as one of the major tourist destinations.

TOURIST ARRIVALS

On account of aggressive media campaign undertaken by the government, tourist inflow to the State has reached to 38 million mark for the calendar year 2010.



SPECIAL TOURISM AREAS

The Karnataka Tourism Policy is emphatic about the development of special tourism areas. It has identified over 250 centres of tourism interest and specified in detail the ways and means for intensive development of these centres. To quote, "the State shall encourage the setting up of additional and appropriate accommodation and tourist facilities in all identified places of tourist importance. The State shall promote diverse tourism activities such as Nature and Health Tourism, Sports Tourism, Adventure tourism and Youth Tourism both through governmental and private efforts in order to exploit meaningfully the abundant bounty of nature that has been bestowed upon Karnataka. For the purpose, activities such as water and aero sports, trekking, rock and hill climbing and angling shall be promoted especially through the encouragement of voluntary and non-governmental organizations, Further, projects such as golf clubs, amusement parks, children's recreation and hobby centre and health resorts shall be brought within the purview of the tourism industry 'and

benefits available to tourism projects extended to such undertakings".

With this, the policy has given a new dimension to the polemics of exploitation itself; it has brought forth a new concept in exploitation, namely, "meaningful exploitation"! It is no wonder that projects like golf clubs, amusement parks, star hotels, Water sports and international convention centre form part of this grandiose design of meaningful exploitation. There is a need to developing centres of interest in the Northern Karnataka and refurbishing the transport facilities to historical monuments.

GOVERNMENT OF KARNATAKA'S PROJECTIONS ON TOURISM OF THE STATE

Measures and indicators/ projections	2005	2010	2020
Arrival of foreign tourists (in lakhs)	2.53	3.23	5.26
Employment generation by tourism(in lakhs)	4.49	5.72	9.32
Arrival of domestic tourists (in lakhs)	244.89	359.82	776.83
Revenue due to tourism (in Rs.lakhs)	25587	46039	119413
Forex due to tourism (in Rs.lakhs)	39153	49970	81396
Tourism contribution to state GDP (%)	13	15	25

Adopted from the Government of Karnataka, Global Investors Meet 2010, Sector profile Tourism: p.9 Source: Govt. of India, Department of Tourism, Market Research Division, Final Report on 20 year Perspective Plan for Development of Sustainable Tourism in Karnataka - March 2003 Prepared by Dalal Mott MacDonald.

IMPACTS OF TOURISM IN KARNATAKA

1. Generating income and Employment : Tourism in Goa has emerged as an instrument of income and employment generation, poverty alleviation and sustainable human development. It contributes to the national GDP and 5.72 percent of the total employment in Karnataka

2. Source of Foreign Exchange Earnings : Tourism is an important source of foreign exchange earnings in Karnataka. This has favourable impact on the balance of payment. The tourism industry in Karnataka generated

3. Preservation of national Heritage and Environment : Tourism helps preserve several places which are of historical importance by declaring them as heritage sites.

4. Developing infrastructure

5. Promoting Peace and Stability

NEGATIVE IMPACTS OF TOURISM IN KARNATAKA

1. Depletion of Natural Resources
 - a. Water Resources
 - b. Local Resources
 - c. Land degradation
2. Pollution
 - a. Air and Noise Pollution
 - b. Solid Waste and littering
 - c. Sewage
3. Undesirable Social and Cultural Change
4. Increase Tension and Hostility
5. Creating a Sense of Antipathy
6. Adverse Effects on Environment and Ecology
7. Destruction and Alteration of Ecosystem.

CONCLUSION

The protection of the environment can be achieved by proper planning and management of various spatial entities viz. water resources, land, settlements, forests etc. in the most effective manner. As in many other parts of the country, development activities and human pressure including tourism, have led to an adverse impact on the environment. Like any other state being affected by the rapid industrialization, Karnataka is at the stage of great concern for the environmental conservation. Several issues which need to be looked upon, include waste management, pollution, uncontrolled construction with the little attention given to protect delicate ecosystem and many others. There seems lack of basic infrastructure for proper management and sustain the pressure of massive flow of tourist every year. There is ample scope to develop eco tourism along the ghats, hills and wildlife sanctuary and adventure tourism.

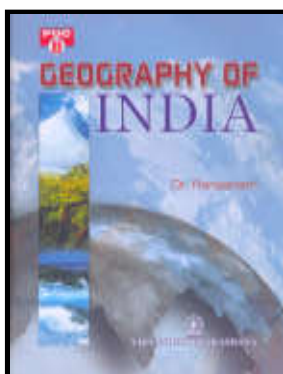
Scope should be given to heritage and cultural tourism, Government should tie up with non-government organization NGOs to provide infrastructural facilities and develop tourism in the state.

The new tourism policy of Karnataka state has main aim of increasing tourist traffic to the state. The plan of creating infrastructure facilities on par with international standards will benefit not only the dependents of tourism but also the wider community. Apart from this, working with stakeholder and partnerships with private players will bring confidence about their economic stability. Still the policy needs to be focused more on areas of protecting the economic position of rural women, interest of local youth, local petty businessmen, local micro enterprises, micro finance, local NGOs etc.

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CROP COMBINATION REGIONS IN BAILHONGAL TALUK BELGAUM DISTRICT KARNATAKA STATE

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ABSTRACT

The crop combination technique suggested by J.C. Weaver has made it possible to demarcate the agricultural regions. There are three revenue circles in Bailhongal taluk viz. Bailhongal, Nesargi and Kittur.

The Bailhongal Taluk is predominantly an agriculture region. More than 90% of the total working force is engaged in agriculture. The cropping pattern and agricultural area under different crops in three revenue circles of Bailhongal Taluk are not at all isomorphic in physical, ecological, edaphic and cultural variables. After an indepth analysis of nine crops at the circle level, an attempt has been made to know crop combination regions on the basis of net sown area in the Bailhongal Taluk by J.C. Weaver Methods.

1.0. INTRODUCTION

Agriculture is tilling crops and herding animals to produce many necessities of life, especially food for survival and fiber for the body protection. It is the main activity of mankind through out the history of life. As a result, the cultural landscape, much of the earth's surface will be largely agricultural. Geographers are much interested to know such landscape. Agriculture is the backbone of the Indian economy and provides livelihood for about 70% of the people in India.

Due to slow development in industries, agriculture in India in general and the study area in particular, is gradually changing from wooden ploughs and other agricultural implements to mechanized tractors and other spraying machines. Apart from the above said factor, planning for maximum return from the land based on the optimum utilization of the cultivated land and maintenance of agronomic balance between agriculture, forestry, grazing grounds, etc., emphasizes the need of a careful land use study in regard to its resources and utilization pattern. The researchers have made an attempt to findout the agricultural crop combination regions of Bailhongal taluk with help of J.C. Weaver's method.

2.0. STUDY AREA

The Bailhongal Taluk is located in the southern part of Belgaum District. It lies between 15°30' and 16°00' North latitude and 74°41' to 75°00' East longitude. The taluk extends over an area of 1122.4 sq.kms. of the total geographical area of the district and it ranks 7th among the 10 talukas of the district. The Bailhongal taluk comes under semi malnad region of Karnataka. There are 126 villages and the population of the taluk was 3,56,288 (2001), the rural population is 3,13,061 and urban population 43,235 in the taluk.

The taluk is divided by Malaprabha river and its tributaries which consists of almost level topography and has slightly variation. The altitude of the taluk varies between 800 to 900 meters above MSL. The Bailhongal taluk has fertile soil, the study area occupies mainly two types of soils: (1) Medium Black Soil - it occupies about 40% of the taluk, it covers major portion of central and northern part of the study area. It also occupies Nesargi circle and some portion of Bailhongal circle. (2) Mixed Soil (Red Mixed Black Soil and Red Soil) - Remaining 60% of the soil is covered by Red and Black Mixed Soil found in the Southern part of the taluk. This type of soil is found in some portion of Bailhongal circle and Kittur circle. It is generally deficit in nitrogen and phosphoric acid. The average annual rainfall of the taluk is 700 to 800 mm. The temperature of the taluk ranges between 18° to 30°. The rainfall in June and July has been found to be suitable for kharif crops. The kharif crops include Cotton, Hybrid Jowar, Soybean, Paddy, Sugarcane, Groundnut, etc. While in Rabi crops grown are Horse Gram, Wheat and Oil Seeds (Kusabi).

3.0. OBJECTIVES OF THE STUDY

- 1) To demarcate the crop regions with reference to crop combination and the system of agricultural enterprise.
- 2) To highlight the volume and direction of the changes in agriculture of this region.
- 3) To examine the causes for the levels of agricultural disparities.

4.0. HYPOTHESIS

Cultivated area is normally mono-cultural. There is a variety of crop combinations in all arable lands with a few honourable exception.

5.0. DATA BASE AND METHODOLOGY

The secondary data have been collected for various crops for the year 2001-02 and 2007-08. Data has also been collected on kharif, rabi and summer crops, from Taluka Head Quarter Bailhongal and Belgaum District Seasonal Crop Report, Socio-Economic Abstract and hand book of Belgaum District (2007-08) etc.

6.0. CROP COMBINATION REGIONS

On the basis of intensive study of specific area alone, one can understand the agrarian structure very clearly. Based on the statistical information crop combination/associations, regions have been determined for recognizing/generalized the picture of agricultural regions. The work done by geographer on crop combinations provides a good basis for demarcating agricultural regions. A study of crop combination not only helps regionalization but also opens up a future line and analysis and action for agricultural planners that is to focus attention on weaker parts for enriching crop rotations. Gupta and Singh divided Indian into agricultural regions, wherein crop land occupancy by various crops have been taken into consideration. The researchers have studied on the basis of statistical examination of crop land occupied by different crops. The crop combination has been determined by standard deviation formula, advanced by Weaver.

$$\Sigma \frac{d^2}{n}$$

Where d, is the difference between actual crop percentage in a given area, and percentage in theoretical combination given above, n is the number of crops in a given combination and is the actual deviation from the standard curve.

The method, however, is far from giving any visual picture of agricultural region. The combination of one, two, three... has significance so far as it shows the dispersion of cultivated area under a number of crops. The larger the number of crops in the combination the greater the dispersion. On the other hand decreasing number of crops in a combination is indicative growing concentration of land under few crops. The crop combination method has second place and it has been reproduced by the first latter.

J. C. Weaver Method

The crop combination of Bailhongal taluks has been determined by standard deviation formula advanced by J.C. Weaver.

$$\sigma = \frac{\Sigma d^2}{n}$$

Where,

d = is the difference between the actual crop percentage in given area

n = is the number of crops in a given combination

Kharif Season (2001-02 & 2007-08)

In Bailhongal taluk there is no monoculture crop in Kharif season (table-1) in (2001-02 & 2007-08).

THREE CROP COMBINATION

This combination occurred only in 2001-02. It was found in two circles namely Kittur and Nesargi. The high concentration of land was under sugarcane, paddy and cotton in Kittur circle, whereas in Nesargi circle cotton, soybean and groundnut. The diversity in the combination increased due to variation in rainfall, soil and the interest of the farmers in rotating the crops.

FOUR CROP COMBINATION

It was found in Nesargi circles in 2001-02 & 2007-08. The crops entering into this combination were cotton, soybean, groundnut and jowar, whereas in 2007-08. From the above discussion it is clearly noticed that the environmental factors influence the distribution pattern of different crops.

FIVE CROP COMBINATION

It was not found in 2001-02, whereas in 2007-08. It was found only in Kittur and Nesargi circles. The crops entering into this combination were paddy, sugarcane, cotton, jowar and maize in Kittur circle, soybean, groundnut, jowar and sugarcane.

SIX CROP COMBINATION

This crop combination was only confined to Bailhongal circle in 2001-02 and 2007-08. The high concentration of land was under cotton, minor millets, maize, jowar, soybean and groundnut. It is due to the suitability of soil and climatic condition of the circle.

SEVEN CROP COMBINATION

It was found only in Bailhongal circle in 2001-02. The land was under cotton, minor millets, maize, jowar, soybean, groundnut and savi crops.

RABI SEASON (2001-02 & 2007-08)

In this season (table 2) monoculture crop combination was only confined to Bailhongal and Nesargi circles in 2001-02. The high concentration of land was under horse gram. The farmers are interested in growing this crop because of good market price and high yield per hectare, whereas in 2007-08 it was not found. (Fig. 1 & 2).

TWO CROP COMBINATION

Two crop combination was confined to only Kittur circle in 2001-02. The main crops are chilli and horse gram. But in the year 2007-08 Bailhongal and Nesargi circles, crops entered into this combination are horse gram and groundnut. It is on account of recent improvement in agriculture and irrigation facilities and good soil in these two circles.

THREE CROP COMBINATION

This combination confined to Kittur circle. The chilli, horse gram and tomato were the important crops. But in the year 2007-08 Bailhongal and Kittur circles with horse gram, groundnut and oil seeds, particularly horse gram, groundnut and maize and there is four crop combination in the taluk.

FIVE CROP COMBINATION

In this season in 2001-02 it was not found. But when as in the year 2007-08 only Kittur circle is in the combination, the crops entered into this combination are horse gram, groundnut, maize, oil seeds (kusubi) and tomato. Due to the introduction of irrigation and black to brown soil and little variation of rainfed in the taluk.

SUMMER SEASON (2001-02 & 2007-08)

In this season in the year 2001-02 Kittur and

Bailhongal circles comes under monoculture i.e. chilli. Here farmers grow chilli crop with the help of bore well irrigation.

TWO CROP COMBINATION

This crop combination is not found in 2001-02. It was found in two circles in 2007-08, i.e. Kittur and Nesargi circles, the crops are chilli and tomato.

THREE CROP COMBINATION

In this season only one circle i.e. Nesargi comes under three crop combination in the year 2001-02, the crops are chilli, alasandi and tomato, but whereas in the year 2007-08 Bailhongal circle comes under three crop combination i.e. chilli, tomato and maize.

FOUR CROP COMBINATION

In this season 2001-02 and 2007-08 did not found four crop combination in the taluk.

Table 1 : Bailhongal Taluk Crop Combination by Different Method Kharif Season

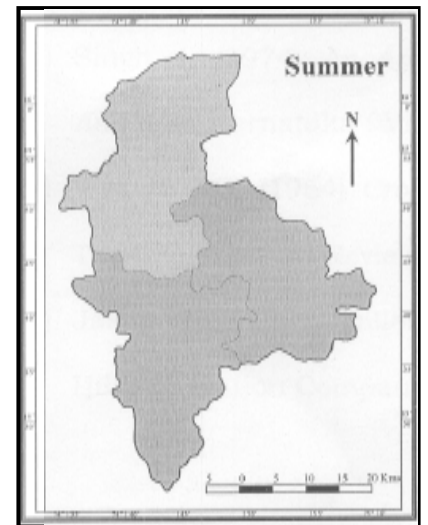
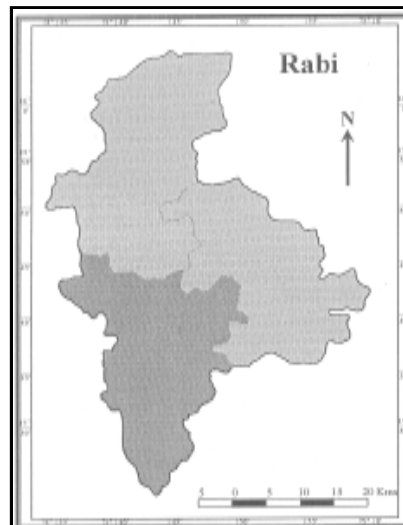
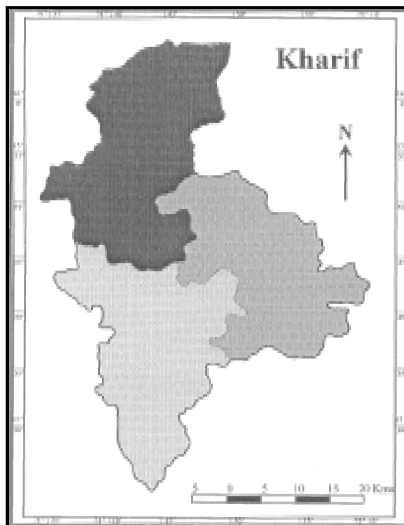
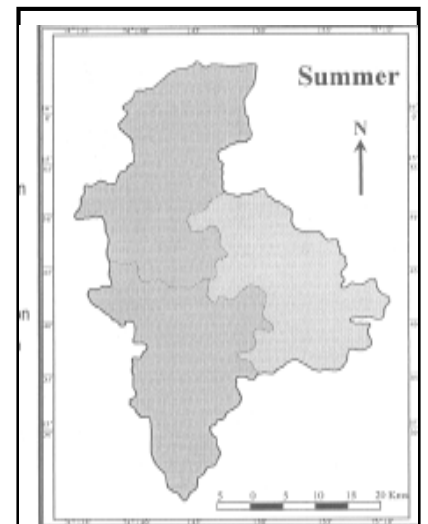
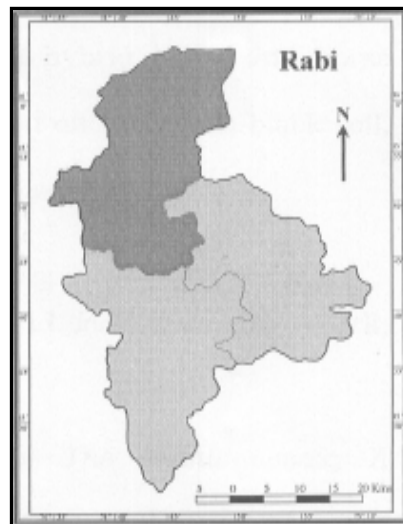
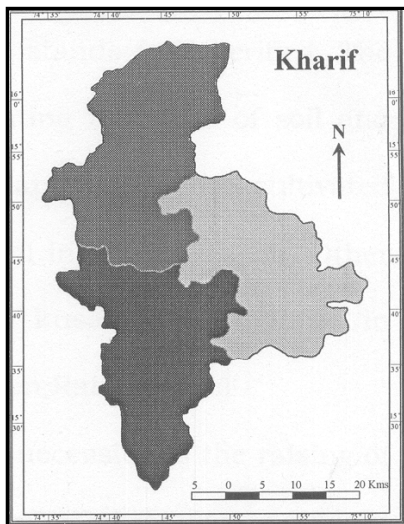
Sl.No.	Name of Combination	2001-2002	2007-2008
		J.C. Weaver Method	J.C. Weaver Method
1.	Monoculture	Nil	Nil
2.	Two Crop Combination	Nil	Nil
3.	Three Crop Combination	Kittur Circle: Sugarcane, Paddy, Cotton	Nil
4.	Four Crop Combination	Nesargi Circle: Cotton, Soybean, Groundnut, Jowar	Nesargi Circle: Soybean, Groundnut, Cotton, Jowar
5.	Five Crop Combination	Nil	Kittur Circle: Paddy, Sugarcane, Cotton, Jowar, Maize
6.	Six Crop Combination	Nil	Bailhongal Circle: Soybean, Maize, Cotton, Groundnut, Jowar, Minor Millets
7.	Seven Crop Combination	Bailhongal Circle: Cotton, Minor Millets, Maize, Jowar, Soybean, Groundnut, Savi	
8.	Eight Crop Combination	Nil	Nil

Table 2 : Bailhongal Taluk Crop Combination by Different Method Rabi Season

Sl.No.	Name of Combination	2001-2002	2007-2008
		J.C. Weaver Method	J.C. Weaver Method
1.	Monoculture	Bailhongal Circle: Horse Gram Nesargi Circle : Horse Gram	Nil
2.	Two Crop Combination	Kittur Circle : Chilli Horse Gram	Bailhongal Circle:Horse Gram, Groundnut Nesargi Circle : Horse Gram, Groundnut
3.	Three Crop Combination	Nil	Nil
4.	Four Crop Combination	Nil	Nil
5.	Five Crop Combination	Nil	Kittur Circle: Horse Gram, Groundnut, Maize, Kusabi & Tomato

Table 3 : Bailhongal Taluk Crop Combination by Different Method Summer Season

Sl.No.	Name of Combination	2001-2002	2007-2008
		J.C. Weaver Method	J.C. Weaver Method
1.	Monoculture	Bailhongal Circle : Chilli Kittur Circle : Chilli	Nil
2.	Two Crop Combination	Nil	Kittur Circle :Chilli, Tomato Nesargi Circle : Chilli, Tomato
3.	Three Crop Combination	Nesargi Circle : Chilli, Alasandi, Tomato	Bailhongal Circle : Chilli Tomato, Maize
4.	Four Crop Combination	Nil	Nil

2001-02**2007-08****INDEX**

- Mono Culture
- Two Crop Combination
- Three Crop Combination
- Four Crop Combination
- Five Crop Combination
- Six Crop Combination
- Seven Crop Combination
- Eight Crop Combination

8.0. CONCLUSION

The hypothesis framed in the beginning of the paper is tested with evidences cited in the exposition and stands fully verified. The indepth investigation uncovers the dominating influence of soil and rainfall. Cotton,

hybrid jowar, sugarcane and paddy are cultivated predominantly in medium to deep black soil in Kharif season. Other two crops horsegram and groundnut and kusabi are produced in middle and northern part of the study area (in Rabi season)

- Continued on Page No. 32

A STUDY ON PERCEPTIONS OF ENGLISH LANGUAGE TEACHERS IN IDENTIFYING THE BARRIERS OF ENGLISH LANGUAGE LEARNERS

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ABSTRACT

The major purpose of the present investigation was to study the perception of the Secondary school English language teachers towards the barriers of ELLs in learning English language: 62 secondary school teachers were selected from seven taluk of Shimoga District through stratified random sampling technique. The data was collected by a 5 point scale questionnaire, which was prepared by the researcher. The findings indicate that there were significant English language learning barriers among ELLs as perceived by rural and urban English language teachers. Thus the present study analyses the barriers of the second language learners.

INTRODUCTION

"English is studied in High schools and in the Universities in order that might keep us in touch with the living stream of ever growing knowledge."-University Education Commission (1948)

English is being learnt and used all over the world not out of any imposition but through the realization that it has certain inherent advantages. English is considered as world knowledge as it caters the needs of the changing world. It is also Lingua Franca of most of the developing and developed countries. It is being used by a variety of people for a variety purposes. It became a medium of instruction. Many Indians at first were against the introduction of English into education but later they had to accept it. It is realised that it is their innate instinct for survival under all conditions. English now stands as the most widely spoken language in India, after Hindi. Despite being a second language, its dominance has grown over the years, and it has come to occupy the position of an accepted language in the fields of business and education. In fact, even though only 4% of the Indian population uses English regularly, India still has the third largest English-speaking population in the world, after the USA and the UK, and this number is only slated to increase.

The role of English language in our educational system has been shifting over years. It is quite clear from the various Education recommendations of India that English teaching should be strengthened at all stages. There is unmistakable public opinion that learning English voluntarily is for our own good. English is being learnt and used all over the world not out of any imposition but through the realization that it has certain inherent advantages. English language learners constitute one of the fastest growing populations in today's classrooms, witnessing their population a significant proportion of

students are among academic failures. What are the contextual and child level factors of English language learners (ELLs) that lead to academic difficulties? Beyond the debates about language of instruction and merit of shortcomings of corresponding programmes, the language teacher must be informed by an understanding of their developmental trajectories of language and their influencing factors. So the present study is made to identify the barriers of ELLs among secondary school as perceived by experts. This study is also made to know the perceptions of students and teachers towards ELL.

OBJECTIVES

- To identify the barriers of English language learners among kannada medium secondary school students of Shimoga District as perceived by English language teachers.
- To identify the barriers of rural and urban English language learners among kannada medium secondary school students of Shimoga District as perceived by English language teachers.

METHOD

Population and Sample

Population of the study included 62 English language teachers of 7 taluks of Shimoga District. A stratified random sampling and purposive sampling technique was applied to select the sample of the present study. The English teacher sample includes government, aided and unaided schools of rural and urban of 7 taluk of Shimoga District.

TOOL

Researcher developed a questionnaire and standardised it by applying validity and reliability. Informants were asked

to read all the 17 statements carefully and encircle any one the response which they think appropriate. Informants were provided with questionnaire to seek their responses regarding the barriers of learning English and suggestions to improve English language learning among rural Kannada medium students of Shimoga District. The informants were asked to encircle any one of the alternatives provided; each statement has five alternative responses. A) S.A = Strongly Agree, B) A = Agree, C) U = Undecided, D) D = Disagree and E) S.D = Strongly Disagree. The questionnaire developed by the Researcher consisting of three dimensions related to difficulties of secondary school students in English language learning.

*** TABLE- MEAN AND PERCENTAGE VALUES PERTAINING BARRIERS OF ELL AS PERCEIVED BY ELTs.**
RESULTS

After analyzing the results the following barriers were identified among the rural kannada medium students.

Barriers of English language learners in English language learning

MOTHER TONGUE AS A BARRIER FOR ELL

It is observed highest percentage of 61% (58% of urban teachers and 66% of rural teachers strongly agree) English language teachers agree that students find difficult in learning English language as it is not a mother tongue language. 65% of English language teachers agree that mother acts as a barrier in acquisition of English language among learners. Similarly 73% of teachers agree (39% of urban teachers and 34% of rural teachers strongly agrees) and 52% of teachers strongly agree that students find sentence structures in English which are different from the structures in their mother tongue language. 52% of urban teachers 55% of rural teachers agree that fluency in mother tongue and language pattern make difficult to motivate adolescent students to learn English. Similarly 45% of urban and 48% of the rural ELTs agrees that peculiar features of English language increases pronunciation problems among second language learners.

ENVIRONMENT AS A BARRIER FOR ELL

48% of urban teachers and rural teachers agree that students have little opportunity to speak English in their daily environment. Similarly 52% of urban and of rural teachers agree that Students find lack of fluent English speakers in their surroundings. Further 30% (27% of urban teachers and 34% of rural teachers strongly agree) of the teachers strongly agree that discouragement of elders/ friends regarding English language hampers students from learning English language. In contrast when over all teacher responses are considered, 40.32% of the teachers agree that students have less exposure in schools to practice English language whereas 25.8% of teachers disagree with the same.

PSYCHOLOGICAL BARRIERS FOR ELL

The highest percentage of teachers i.e, 62.9% agree that Inferiority complex among students prevents them from speaking English. Similarly 48.3% of EL teachers agree that students hesitate to speak in English as they think that others may make fun of them if they commit mistakes. Further 67% of English language teachers agree that students inadequacies frustrate them in using the English language. Further 51.6% of the teachers agree that students find it difficult to access vocabulary and structures in English because of its unfamiliarity. Further 51.6% of teachers agree that Less confidence among the learners of second language reduces the efficiency of learning English language.

SUMMARY AND CONCLUSION

The strong and established relationship between students' English language acquisition and their ability to successfully comprehend places a heavy demand on classroom teachers, curriculum planners, program developers, organizers of staff development plans, language researchers, and on parent outreach programs. The demand is that significant attention be given to the development of students' English language acquisition. Much is known from research about what are the difficulties faced by the teachers and young children acquire language. Much is also known about the differences in the amount of English language acquisition among teachers bring to school, and the negative impact on the acquisition and maintenance of English language acquisition. It is clear that rich oral language environments must be created in school and classrooms to promote the development of school- and book-related language. As students progress through the grades, the development of their English language acquisition knowledge must remain a priority. Attention to English language acquisition development is important for all students, but is especially important for students who are at-risk for learning to read.

Teaching ELL students a few strategies, which can be used flexibly in a variety of contexts, helps to level the playing field for these students as they are integrated into mainstream classrooms. As the subgroup of ELL students continues to increase at a higher proportional rate than the population of mainstream students, teachers will need to utilize effective strategies grounded in research-based instructional models within a framework that supports learning for all students. In many schools and district across the country, this will call for a revision of practice and close the achievement gaps. ELL students benefit from both auditory and visual overviews. A handout that outlines the major ideas and shows the relationship of one idea to another can help students build or activate their background knowledge. Merely handing out an overview is not enough.

* TABLE- MEAN AND PERCENTAGE VALUES PERTAINING BARRIERS OF ELL AS PERCEIVED BY ELTs.

Sl No.	Particulars	Urban Teacher responses						Rural teacher responses						Overall teacher responses					
		S.A.	A	U	D	S.D.	Total	S.A.	A	U	D	S.D.	Total	S.A.	A	U	D	S.D.	Total
1.	Students find it difficult in learning English language as it is not a mother tongue language.	19	13	0	1	0	33	19	10	0	0	0	29	38	23	0	1	0	62
		58	39	0	3	0	100 0	66	34	0	0	0	100	61	37	0	1.6	0	100
2.	Mother tongue obstructs students in learning English language.	10	9	7	7	0	33	8	11	2	8	0	29	18	20	9	15	0	62
		30	27	21	21	0	10 0	28	38	6.9	28	0	99. 98	29	32.2	14. 51	24. 19	0	100
3.	Influence of mother tongue creates problems of pronunciation among English language learners.	12	12	1	8	0	33	11	12	1	5	0	29	23	24	2	13	0	62
		36	36	3	24	0	10 0	38	41	3.4	17	0	99. 98	37	38.7	3.2	20. 9	0	100
4.	Students find difficulty in adopting sentence structures in English which are different from the structures in their mother tongue.	13	17	1	2	0	33	10	15	1	2	1	29	23	32	2	4	1	62
		39	52	3	6.1	0	10 0	34	52	3.4	6.9	3.4 4	99. 97	37	51.6 1	3.2	6.4 5	1.6	100
5.	Fluency in mother tongue and language patterns often make difficult to motivate adolescent students to learn English.	6	17	5	5	0	33	6	16	3	4	0	29	12	33	8	9	0	62
		18	52	15	15	0	10 0	21	55	10	14	0	99. 98	19. 35	53. 2	12. 9	14. 51	0	100
6.	Peculiar features of English language increases pronunciation problems among Second language learners.	9	15	2	5	2	33	7	14	2	4	2	29	16	29	4	9	4	62
		27	45	6.1	15	6.1	10 0	24	48	6.9	14	6. 89	99. 97	25. 8	46. 77	6. 45	14. 51	6. 45	100
7.	Students have little opportunity to speak English in their daily environment.	11	16	3	2	1	33	10	14	3	1	1	29	21	30	6	3	2	62
		33	48	9.1	6.1	3	99. 99	34	48	10	3.4	3. 44	99. 97	33. 87	48. 38	9. 67	4. 83	3.2	100
8.	Students find lack of fluent English speakers in their surroundings.	13	17	3	0	0	33	11	15	3	0	0	29	24	32	6	0	0	62
		39	52	9.1	0	0	99. 99	38	52	10	0	0	99. 99	38. 7	51. 61	9. 67	0	0	100
9.	Discouragement of elders/ friends regarding English language hampers students from learning English language.	9	13	4	7	0	33	10	9	4	6	0	29	19	22	8	13	0	62
		27	39	12	21	0	10 0	34	31	14	21	0	99. 98	30. 6	35. 4	12. 9	20. 9	0	100
10.	Students have less exposure in schools to practice English language.	4	14	8	5	2	33	4	11	1	11	2	29	8	25	9	16	4	62
		12	42	24	15	6.1	99. 99	14	38	3.4	38	6. 89	99. 98	12. 9	40. 3	14. 51	25. 8	6.4	100
11.	Students find it difficult to learn English language because of lack of their parents educational background or non English speaking parents.	14	13	1	5	0	33	12	11	2	4	0	29	26	24	3	9	0	62
		42	39	3	15	0	99. 99	41	38	6.9	14	0	99. 98	41. 9	38. 7	4. 83	14. 5	0	100
12.	While learning second language congenial atmosphere for communication is not found as there is no availability of group work.	8	18	1	6	0	33	13	9	2	5	0	29	21	27	3	11	0	62
		24. 2	54. 5	3	18	0	99. 99	45	31	6.9	17	0	99. 98	33. 87	43. 54	4. 83	17. 74	0	100
13.	Inferiority complex among students prevents them from speaking English.	10	20	0	3	0	33	8	19	2	0	0	29	18	39	2	3	0	62
		30	61	0	9.1	0	100	28	66	6.9	0	0	99. 98	29	6. 29	3.2	4. 83	0	100
14.	Students hesitate to speak in English as they think that others may make fun of them if they commit mistakes.	14	16	1	2	0	33	12	14	1	2	0	29	26	30	2	4	0	62
		42	48	3	6.1	0	10 0	41	48	3.4	6.9	0	99. 97	41. 9	48. 38	3.2	6.4	0	100
15.	Students' inadequacies frustrate them in using the English language.	4	22	4	2	1	33	4	20	2	2	1	29	8	4	6	4	2	62
		12	67	12	6.1	3	10 0	14	69	6.9	6.9	3. 44	99. 97	12. 9	67. 7	9. 67	6.4	3.2	100

16.	Students find it difficult to access vocabulary and structures in English because of its unfamiliarity.	11	18	2	2	0	33	11	14	2	2	0	29	22	32	4	4	0	62
		33	55	6.1	6.1	0	10 0	38	48	6.9	6.9	0	99. 98	35. 4	51. 61	6.4	6.4	0	100
17.	Less confidence among the learners of second language reduces the efficiency of learning English language.	9	17	1	5	1	33	7	15	1	4	2	29	16	32	2	9	3	62
		27. 3	51. 5	3	15	3. 03	10 0	24	52	3.4	14	6. 89	99. 97	25. 8	51. 61	3.2	14. 51	4. 83	100

Teachers must verbally present the information and explicitly show the relationships of the concepts that will be taught. These concepts are the ideas represented by the key vocabulary. Teachers can further scaffold instruction by meeting with ELL students to tell them how this information was organized and by giving them explicit instruction on key vocabulary terms before they are presented to the entire class.

Meet the diverse needs of all students. Strategically planning the placement of varied methods, materials, and technology tools into direct instruction lesson plans ensures students are purposefully working toward the learning objective. Without careful planning, teachers run the risk of providing engaging activities that are incidental to academic goals.

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STREAM NETWORK ANALYSIS FOR WATERSHED DEVELOPMENT A CASE STUDY OF GADAG DISTRICT

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ABSTRACT

The geological structure and relief features are the predominant factors in controlling the shape and pattern of drainage system. Streams and rivers are the most dynamic parts of the earth's physical environment. The behaviour of streams and rivers is a matter of great interest for a variety of concerns, particularly in case of water resource development. The analysis of streams and their studies have political, social, economic and physical relevance. The character and behaviour of the fluvial system at any particular location reflect the integrated effect of a set of upstream controls, notably climate, geology, land use and basin physiography, which together determine the hydrological regime. In the watershed development, the links between slopes and channels in the movement of water through the drainage basin should be recognized at the outset. The objective of this paper is to analysis the stream network characteristics through Morphometric methods in respect of Gadag district.

1. INTRODUCTION

Streams and rivers are the most dynamic parts of the earth's physical environment. The behaviour of streams and rivers is a matter of great interest for a variety of concerns, particularly in case of water resource development. The analysis of streams and their studies have political, social, economic and physical relevance.

Rivers usually have well defined spatial boundaries and can usefully be regarded as open systems in which energy and matter are exchanged with an external environment. The character and behaviour of the fluvial system at any particular location reflect the integrated effect of a set of upstream controls, notably climate, geology, land-use and basin physiography, which together determine the hydrologic regime. Downstream controls such as base-level are also important. Climate is of primary significance in that it provides the energy for the most important processes and in combination with vegetation directly influences basin hydrology (David Knighton, 1978). Geological variables can also have far-reaching effects at a variety of scales, particularly in constraining the nature and level of fluvial activity. In addition to these natural controls man's influence is becoming increasingly relevant through river regulation schemes and changing patterns of land use. With the marked increase in dam construction since 1945, up to 20% of total stream run off is regulated in Africa and North America, with comparable figures of 15% and 14% for Europe and Asia respectively (Beaumont, 1978).

In the fluvial system the transfer of water and material from land surface to oceans is characterized by a tendency toward increasing concentration and organization. A

spatially diffuse input in the form of precipitation and weathered material is combined via a system of hill slopes and a network of channels into a single out put at the mouth of a drainage basin. Available in a hierarchy of sizes, the drainage basin is typically a well-defined topographic and hydrologic entity, which is regarded as a fundamental spatial unit (Chorley, 1969). In the watershed development, the links between slopes and channels in the movement of water through the drainage basin should be recognized at the outset. The links sometimes may tend to become weaker for larger streams with well-developed flood plains. But it is essential to focus on the channel network them. It is for this reason, the morph metric analysis becomes so essential in developing a watershed and hence the researchers has made an attempt to understand the drainage network characteristics in this paper to choose the favourable spots for water storage.

2. STUDY AREA

Gadag a unique district located in the western part of northern Karnataka lies between 14°57' to 15°52' North latitude and 75°16' to 76°45' East longitudes. The district is bounded by six districts namely Dharwad on west, Belgaum on the North-west, Bagalkot on the North, Koppal on the east, Ballary on the South-East and Haveri on the South-west. Malaprabha River in the North and Tungabhadra in South from the natural boundaries.

The district spreads over a total geographical area of 4656 sq Kms. Its measures 104 kms from north to south and 84 kms from east to west. The district lies about 657.4 meters above MSL. Gadag consist of 5 taluks namely - Gadag, Mundaragi, Naragunda, Ron and Shirahatti.

3. METHODOLOGY

The Morphometric methods for stream network analysis have been employed to know the drainage characteristics such as stream order, length, bifurcation ratio, basin area and density of drainage etc.

4. MAJOR STREAMS AND THEIR BASIN AREAS

There are two main rivers in Gadag district viz., the Malaprabha and the Tungabhadra rivers. The Malaprabha River is the main trunk stream and runs along the northern border of the district. The southern portion of the district has been drained by the Tungabhadra river. There are number of tributary streams to both the rivers, viz; Bennihalla, Sasvihalla, Mugalihalla, Jaulhalla and Hirehalla in northern part and Shirahattihalla, Dodda halla, kappathalla and Hirehalla in the southern part of the district. In the central part of the district the drainage has been relatively poorly developed. Ichalahalla, Kurattihalla, Savalhalla, Chandikanahalla drains the central western part and Ayyanakerihalla, Hunashihalla, Talavrtihalla, Kesarhalla drain the eastern part. The author have made an attempt to analyse the stream network characteristics and their geometrical properties for watershed development. About 2767 Sq. Km. Area of the district comes under the Malaprabha Basin representing 59.43 percent of the total geographical area of the district. Tungabhadra basins cover an area of 1889 Sq.Km and 40.57 percent of the total geographical area of the district. Malaprabha and Tungabhadra rivers receive water from a large number of streams of different order. The stream orders, total segments (numbers), length and density etc., have been analyzed and are as given below.

5 LINEAR ASPECTS OF THE CHANNEL SYSTEM

The linear aspects of drainage network such as stream order (Nu) and Stream segments, bifurcation ratio, stream length and drainage density (Dn) results have been presented in table 1, 2 and 3.

5.1. STREAM ORDERS AND STREAM SEGMENTS

In the present study, the channel segment of the drainage basin has been ranked according to Strahler's stream ordering system. The study area i.e. Malaprabha and Tungabhadra are 5th order drainage basins (See Drainage Map) Drainage patterns of stream network from the basins have been observed as mainly dendritic type which indicates the homogeneity in texture and lack of structural control. This pattern is characterized by a tree like or fernlike pattern with branches that intersect primarily at acute angles. The stream ordering for the two river basins, Malaprabha, and Tungabhadra show a five order stream segments. The following table 1 shows the stream order, segments and bifurcation ratio, of Malaprabha and

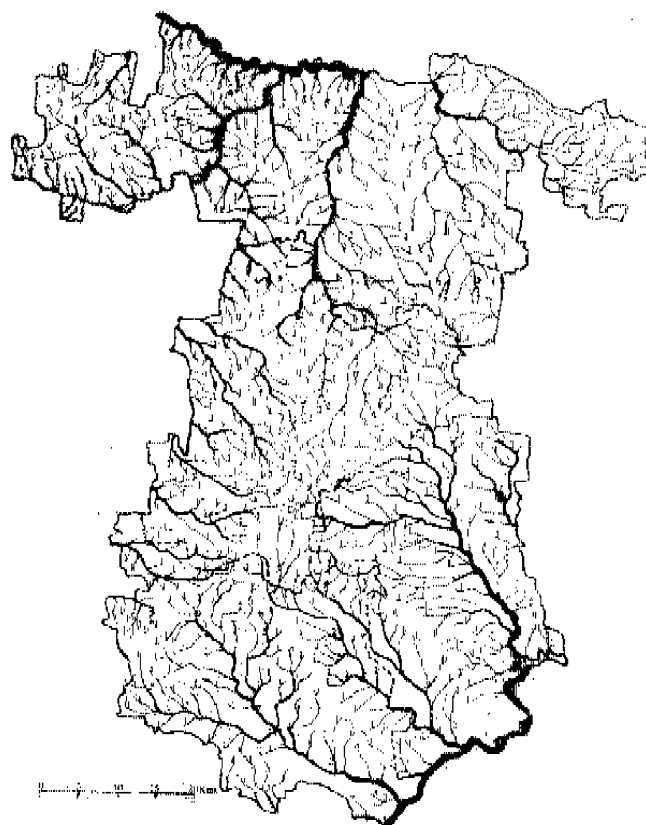
Tungabhadra river basins. The Malaprabha river consists of five orders of stream segments. There are 483 Streams were identified of which 386 are 1st order stream segments, 79 are 2nd order segments. 14 are 3rd order, 4th order segments are only 3 and the Malaprabha river forms the highest order i.e., fifth order segment.

Table No.1 : Gadag District: Stream order, Stream Segments and Bifurcation Ratio

Sl. No.	River basin	Stream order	Stream segment	Bifurcation ratio	Mean Bifurcation ratio
1.	Malaprabha Basin	1st	386	-	18.19/3 = 6.06
		2nd	79	5.89	
		3rd	14	6.64	
		4th	03	5.66	
		5th	01	-	
2.	Tungabhadra Basin	1st	314	-	15.85/3 = 5.28
		2nd	75	5.19	
		3rd	17	5.41	
		4th	04	5.25	
		5th	01	-	
Total/Average			894	5.67	5.67

The Tungabhadra river basin also consists of five orders of streams. The 1st streams are 314, 2nd order 75, 3rd order 17, 04 are 4th order and the Tungabhadra river is a main trunk stream. (Table No.-1)

Drainage Pattern and Stream : Gadag District



5.2. BIFURCATION RATIO (RB)

The term bifurcation ratio (Rb) is used to express the ratio of the number of streams of any given order to the number of streams in next higher order (Schumn, 1956).

The bifurcation ratio (Rb) has been calculated by applying the following formula.

$$R_b = \frac{N_u}{N_{u+1}}$$

Where

Rb = Bifurcation ratio

Nu = Total number of stream segments of the order 'u'

Nu + 1 = Number of segments of the next higher order

The bifurcation ratio for the successive orders of the Malaprabha river basin is given in the table -1. For every second order stream there are approximately 5 first order streams. Similarly for every third order stream there are 5-6 second order streams and for fourth order it is 7-8 streams of third order stream segments. The bifurcation ratio for the successive orders of the Tungabhadra river basin from 1st to 4th order is 1:5.07, 1:5.12 and 1:5.27. The mean bifurcation ratio for Malaprabha river basin is 1:5.99 and Tungabhadra river basin is 1:5.15. However the mean bifurcation ratio value is 5.54 for the study area (Table No.1) Bifurcation ratios characteristically range between 3.0 and 5.0 for basins in which the geologic structures do not distort the drainage pattern (Strahler, 1964). Strahler (1957) demonstrated that bifurcation ratio shows a small range of variation for different regions or for different environment dominates. The mean bifurcation ratio value is 5.57 for the study area (Table-1) which indicates that the geological structures are less disturbing the drainage pattern.

The significance of bifurcation ratio with reference watershed development in Gadag district is highly positively acceptable. The bifurcation ratio 5.37 is most favourable for the watershed development under semi-arid conditions in Gadag district.

5.3. STREAM LENGTH (LU)

The stream length plays a significant role in deciding the watershed spots as it gives an idea about surface run off and the volume of water flow through the channel to be collected in the proposed spot. The stream length ratio has been calculated for all orders of streams in Gadag district. It may be noted that each stream order has a characteristic number of channels, length and drainage area. The stream length aspects have been given in the table -2 for two river basins of Gadag district. In Malaprabha river the 1st order streams have a total length of 812 Km and with a mean length of 2.29 Km and a ratio of 1:0.41. The figures for the 2nd and 3rd order streams are, total

length 321 Km means length 3.87 Km, ratio 1:0.34, and 111 Km length, 5.84 Km mean length and ratio 1:0.76 respectively. The total length of 4th order streams is 72 Km with a mean length of 24 Km. It is observable that the mean length of all streams increases with increase in order. (Table No. 2) The total length of the main trunk stream the Malaprabha has a length of 28 Km in Gadag district. The total length of all streams of Malaprabha river is 1341 Km.

Table No.2. Gadag District: Stream length and Length Ratio

Sl. No.	River basin	Stream order	Stream Length (kms)	MeanLength (km)(Lsm = Lu/Nu)	Length ratio RL = Lu/Lu-1
1.	Malaprabha Basin	1st	812 (688 Cms)	2.29	
		2nd	321 (272 Cms)	3.87	1:0.41
		3rd	111 (94 Cms)	5.84	1:0.34
		4th	72 (61 Cms)	24.00	1:0.76
		5th	25 (21 Cms)	-	
2.	Tungabhadra Basin	1st	789 (669 Cms)	2.77	
		2nd	234 (198 Cms)	3.34	1:0.17
		3rd	112 (95 Cms)	6.59	1:0.49
		4th	69 (58 Cms)	17.25	1:0.62
		5th	45 (38 Cms)	-	
Total/Average		2590 (2194 Cms)		8.24	

Total length of all streams = 2590 Kms

Mean length of all streams = 8.24 Kms

(Excluding trunks streams)

The Tungabhadra river basin has a total length of all streams to an extent of 1249 Kms. Out of which 789 Kms length is represented by 1st order streams, 234 Kms by 2nd order, 112 Kms by 3rd order streams, 69 Kms by 4th order streams and the main trunk stream i.e., Tungabhadra has 45 Kms of length.

The total length of all streams including two river basins in Gadag district is 2590 Kms. The mean length of all streams (excluding trunk streams) is 8.24 Kms. The mean stream length ratio with each increase in order has some fluctuations. The proportion of length increase ratio will generally be constant for a given drainage system. But chance variations may be expected in the configuration of any drainage system. These may produce inequalities of observed length ratio from one order to the next. The length ratio for two basins streams has no constant values to form a geometric series. This is mainly due to variations in the nature of rock and terrain conditions.

5.4 DRAINAGE DENSITY AND BASIN AREAS

The measurement of Drainage Density (Dd) is a useful numerical measure of landscape dissection and runoff potential. Drainage density is a measure of the length of stream channel per unit area of drainage basin. Mathematically it is expressed as : $Dd = L_u/A$

Where

Dd = Drainage density

Lu = Total stream length of all orders

A = Area of the basin (km²)

Table No.3. Gadag District - Drainage Density

Sl. No.	Drainage Basin	Total Area (in Kms)	Total Stram Length (in Kms)	Drainage Density L/A (Km/Km ²)
1.	Malaprabha River Basin	2767	1341	0.48
2.	Tungabhadra River Basin	1889	1249	0.66
	Total	4656	2590	0.59

The basin area, stream length and the drainage density have been depicted in the table -3. The average density of drainage for the entire Malaprabha basin in Gadag district is 0.56 Km per Sq.Km. area. When the individual basins are considered, it is observable that there is slight variation in the drainage density between two basins.

The Tungabhadra basin has a drainage density of 0.66 Km. Per Sq. and Malaprabha river basin has a drainage density of 0.48 Km. per Sq Km. The drainage density may be described as having coarse texture (DD < 5 Km Length per km² /area), medium texture (DD = 5-10 Km Length per km² /area), fine texture (DD = 10-20 Km Length per km² /area), and ultra fine texture etc., The drainage density in Gadag district (i.e. 0.56 Km/Sq.Km) is a coarse texture. This is a characteristic feature of dry regions particularly in semi-arid regions like Gadag district. The coarse drainage density attracts the watershed development for various economic activities. The streams in the Gadag district are non-perennial and flow only during rainy season. Hence it is very essential to store the rainwater during rainy days.

6. Conclusion: The quantitative analysis of morphometric parameters is found to be of immense utility in river basin evaluation, watershed prioritization for soil and water conservation and natural resources management at micro level. The stream network analysis carried out in the Malaprabha and Tungabhadra basins shows that the basins are having low relief of the terrain and elongated in shape. Drainage network of the basins exhibits as mainly dendritic type which indicates the homogeneity in texture and lack structural control. In some parts of the basins the dipping and jointing of the topography reveals parallel and radial pattern. The bifurcation ratio 5.37 is most favourable for the watershed development under semi-arid conditions in Gadag district.

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The coarse texture of soil in the west necessitates the raising of crops in combination. Three and six crop combination cover the largest area in combination of cotton with hybrid jowar and horse gram. Cotton in a large measure is cultivated on the fertile black soil, as it gives a higher yield per hectares on this soil.

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SILHOUETTE OF AGING AT GLOBAL LEVEL : WITH SPECIAL REFERENCE TO INDIA AND NEIGHBOURING COUNTRIES

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1. INTRODUCTION

Throughout the world 1982 was celebrated as the year of the aged. The increased scientific concern for old age is a recent development and is a result of rapid increase in the population of elderly persons. According to UNESCO estimate, the number of the aged above 60 years of age is likely to go up from 350 million in 1975 to 590 million in 2005. About half of them live in developing countries. India alone has 43 million old people according to 1981 census.

As man grows older, his reduced activities and income and consequent decline in his position in family and society makes his life all the more vulnerable. Modern education, urban influence, mass media and above all the emergence of materialistic and individualist outlook had the tendency to alter traditional kinship and family organization towards nuclear family norms with declining authority of the aged. The joint family system in the past provided the aged needed security, status, love and affection and also mental satisfaction but with its disintegration, the aged are left alone to face the problems of advancing age.

In Indian Society where joint family system still prevails, the aged continues to enjoy respect and power. On almost all-important functions performed in the family, it is a usual practice for sons and daughters to turn to their elders for guidance and support. The obligation of the family to look after the aged and to honor and respect them still continues. However, certain recent developments have given rise to some stresses and strains which have made the position of the aged more problematic.

Technological development which, have brought tremendous changes, in the life style and values have created doubts in the minds of younger generation about the utility of past knowledge and experience in solving present day problems, which greatly reduced their dependence on the aged.

The high cost as well as lack of availability of rental accommodation in cities works as constraints in keeping the aged together with their migrant sons and daughters. The migration of younger generation and the demise of many of their aged members tend to increase the problems

of isolation and loneliness for the old staying behind. This is true, for those having no land or productive resource and is dependent on the sale of labour.

The increasing employment of women in offices and factories and their career aspirations lead to the reduced attention towards older members and the increased demand for setting up nuclear family. Gradual breakdown of the joint family following separation or migration of earning members and fragmentation of land holdings.

At times elders have to bear additional economic responsibilities and spend all their savings for educating sons and marrying daughters in addition to meeting family expenses. Comparatively, aging brings more miseries for women than for men. It is due mainly to the patriarchal character of the society and culturally prescribed norms of seclusion between women and their husbands. The migration, which is male-dominated, also adds to miseries of the women, as they have to shoulder all the domestic and other responsibilities in the absence of working males.

The growing age is hardly of any consequence for the alienation and other problems of the aged; rather poor health, economic dependence and non-working status tend to create among the aged feelings of meaninglessness and powerlessness. The advancing age, when the aged has lost many things including friends, spouse, job, status, power, influence, income, health etc. That cannot be replaced, brings in them intolerance, short temperedness, rigidity of attitude, selfishness and suspicion. This shift in their psychological make-up makes their living and adjustment in society more problematic. They feel hurt when dubbed as conservative, out-of-date or old-fashioned and are neglected in day-to-day life.

Much of the socio-economic problems of the aged have their roots in poor health. Age quite often is found to be associated with respiratory and digestive problems, deficiency diseases, and diseases of reproductive system. While most suffer with functional disorders, some have organic disorders particularly in higher age group. The ailments which are commonly associated with later years include among others falling eye-sight and hearing capacity, slow and faltering steps, declining energy and more acute disabilities such as blindness, forgetfulness etc. However, many such problems go undetected and unattended.

In view of the above an attempt has been made in this paper to analyze :

1. Aging and the Aged
2. Silhouette of aged at global level.
3. A condensed account of aged in India and its neighbouring countries.
4. Demographic proportion of aged in India.
5. Problems of the elderly in India.
6. Prevalent policies and programs of the Government & Role of voluntary organizations.

DEFINITION OF THE AGED

The definitions of oldage vary from one country to another and sometimes within a country and of course overtime. It depends on health, sex, labour force participation and socio-economic status. However, in the developed countries all those aged 65 years and above are regarded as aged or elderly, while in the developing countries those aged 60 years and above come under this category.

SILHOUETTE OF AGED AT GLOBAL LEVEL

It is obvious, from the United Nations data of the aged at world level and region/national level (see Table-1) that the world's average percentage of the aged to the total population in 1951 was 5.1 percent. It increased to 5.4 percent by 1970. It stood at 6.2 percent in 1990.

Table - 1 : Estimates and projections of population aged 65 or over by Major Areas and Region 1950-2025 (Percentage)

Major Area/Region	1950	1970	1990	2025
World	5.1	5.4	6.2	9.7
More developed Regions	7.6	9.6	12.1	19.0
Less developed Regions	3.8	3.7	4.5	8.0
Least developed Regions	3.4	3.1	3.0	4.0
Other developing countries	3.9	3.8	4.6	8.7
Africa	3.2	3.1	3.0	4.1
Latin America	3.3	3.9	4.8	8.6
Asia	4.0	4.0	5.0	9.0
Europe	8.7	11.4	13.4	20.1
Oceania	7.5	7.3	9.0	13.9

Source: United Nations 1992- 17

For the same period, population of the aged in the less developed regions and more developed nations gives a different picture. The less developed regions stood with much below the world's average of aged. It was 3.8 percent in 1950. It increased to 4.5 percent in 1990. In the more developed nations the percentage of aged to the total population was higher than the world's average. In 1950,

it was 7.6 percent. It increased to 9.6 and 12.1 percent in 1970 and 1990 respectively.

The projections and estimates of aged for 2025 A.D. at world level, less developed and more developed national levels is almost similar to the trend of the yester decades in the respective regions. The world's average of aged population is likely to be 9.7 percent by 2025 A.D. that it is likely to be 8 percent in less developed nations and 19 percent (much above the world average) in more developed nations.

Table - 2 : Continent-wise, Population (in millions)

Year	Asia	Africa	Europe	Latin America	North	Oceania
1	2	3	4	5	6	7
1994	3.392	700	728	470	290	28
1995	5.017	1.538	731	679	375	39

The continent wise data of the aged (Table 1 & 2) for the corresponding period gives more or less similar picture. Among Africa, Latin America, Asia, Europe and Oceania, Europe has been in lead, with much higher percentage of aged population, followed by Oceania, Asia, Latin America and Africa respectively.

Table - 3 : Age composition of Population of India 1950 to 2000 AD (in %)

Age groups in years	1950	1975	1990	2000
0 - 14	36.02	39.50	34.48	30.16
15 - 19	10.31	10.23	10.51	09.79
20 - 49	42.04	37.15	40.56	44.19
50 - 59	06.40	6.62	07.14	07.48
60 - 69	03.77	4.13	04.56	05.21
70 +	0.56	2.07	02.75	03.18

Source : P. K. Dhillon, Psycho-social Aspects of Aging of India. Concept publishing house Delhi.

Table 3 shows the age group of Indian population from 1950 to 2000 in terms of percentage, as the population of India is increasing very rapidly but there is very uneven increase in the population on the basis of age group classification, but it can be stated that the growth in the aged population i.e., above 60 years of age is in increase in a gradual manner.

Table 4. deals with comparative picture of aged in India and its neighbouring countries of Asia viz., Bangladesh, China and Japan. In 1985, there were 10 percent of aged to the total population in Japan, followed by China with 5.3 percent, India (4.3%) and Bangladesh (3.1%). The aged population (between 65 and 80 years) by 2010 A.D. (see Table-4) would be 5.4 million in Bangladesh, 71.7 million in India. 111.4 million in China, and 24.0 million in Japan. In these countries, elderly population of 80 years above, age group by 2010 A.D.

would be highest in China with 17.5 million, followed by India (9.0 million), Japan (4.7 million) and Bangladesh (0.5 million).

Table - 4 : Probable changes in the Elderly population 1985 - 2010

Countries	65 years and over		80 years and over	
	1985	2010	1985	2010
Bangladesh	3.1	5.4	0.3	0.5
India	32.7	71.7	2.9	9.0
China	56.1	111.4	6.1	17.5
Japan	12.1	24.0	2.0	4.7

Source : Ibid.

From the foregoing discussion, it is very much evident that more developed nations have been with higher percentage of the aged to the total population, than in less developed regions. The reasons would be; Increase in life expectancy and steady decline in death rate & fertility rate over the period of time. Because of advancement of medical technology in particular, and the overall development in general.

DEMOGRAPHIC PROPORTION OF AGED IN INDIA

India's broad population base (548 million in 1971, 683 million in 1981, 830 million in 1991 and 1003 million in 2001 AD) accounts for a sizeable number of people 60+, shows, a definite increasing trend from about 5 percent in 1901 to 6.2 percent in 1991, and it is going to be 10% by 2010 AD

The demographic dimensions relating to the population 60 years above can briefly be summarized in quantitative terms as follows.

The number of people, with 60+ age group in 1901 was about 12 million. In 1991, it increased to 42.7 million, registering around 300 percent increase, over 1901. Further it is expected to reach 130.5 million by 2021 A.D. accounting for about 160 percent increase over 1991.

Table - 5 : India's total and aged population decennial Rate of growth

Decade	% increase in total population	% increase in population 60 +
1951 - 1961	21.51	22.40
1961 - 1971	24.80	32.32
1971 - 1981	24.75	31.60
1981 - 1991	22.72	38.00

Source: Census Reports of India.

The rate of increase of the population 60+ is higher than that of general population (Table-5). Among the elderly/aged, males have been with upper hand than their co-eaves in the female segment. Projections for the aged population for 2021 AD also uphold the same feature (Table-6).

Table - 6 : Projected population of Old persons (60+)

	1971	1981	1991	2001	2011	2021
Total population	550	682	832	1003	1160	1300
60+ male	14.6	19.9	17.8	36.0	46.8	66.0
60+ female	13.5	17.8	24.9	35.3	47.5	64.5

Source: Census Reports of India-2013

The statistical data, about life expectancy in India, is depicted in Table-7. The table reveals that the life expectancy of the Indian population is increasing due to improvement in the medical facilities and health awareness. It can be also observed that the life expectancy of the female is more as compared to the males.

Table - 7: Life Expectance of Males & Females in India (in years)

Period	Males	Females	Total (Average)
1950-55	39.4	38.7	38.6
1960-65	46.2	44.7	45.5
1970-75	51.2	49.3	50.3
1980-85	55.6	55.2	55.4
1990-95	60.1	60.7	60.4

Source : Psycho-Social aspects of aging in India P.K.Dhillon on P.18

This shows increasing life expectancy has been slowly gaining momentum. Arthur Imhof, a noted German Demographer says. Certainly it is correct to say that traditional causes of death claimed their victims from all age groups and the life at that time was therefore much riskier business than it is today. But it is also correct to say that the death was more humane than, since most of the infectious and parasitic diseases kill quickly? Today, precisely because we have defeated those diseases; we are living longer, growing older. Simultaneously, however, the dying process in many cases has been lengthened, chronic suffering no longer extends over a period of a few days or weeks but can often last for many months and years so that the death is ultimately viewed as liberation."

Some research studies proved that the marital status of the population 60+, shows a fairly large degree of the population that has widowed status the incidence of which, as may be expected, is much larger among the females than among the males.

PROBLEMS OF AGED IN INDIA

The aged in India, like their Co-eaves elsewhere, experience a range of problems, but the number, nature and type of the problems experienced differ according to their age, sex, marital status, place of residence i.e., rural and urban residence, and economic status. There are a good number of studies of the aged in India; which have identified some important problems experienced by the aged.

The first and most mundane being that of food, clothing and shelter. These problems do not arise to some extent, for those who are fortunate enough to have some regular source of income like pension or gratuity, etc., But such aged population, according to one study, account for only 11 percent of total aged in India.

India, a country long, known for its joint family system. Providing every facility to the aged on par with other members of the family, the proportion of nuclear families is fast increasing. This means nuclear families fail to provide shelter, food & clothing to the aged, to the extent what they used to avail earlier. Besides, it is common hear, now a days, that old people are often ill treated by their married sons and daughters-in-law.

Many studies have reported that one of the problems of the aged is loss of status in the family and society which, was enjoyed by them before the aging process begins. Along with the loss of status, more psychological problem, which haunts the aged is loneliness. At this stage people are not only incapable of working and they don't know how to spend their time. It is particularly more acute the aged, when they have lost their spouses.

It is very common to note that aged people are more impaired physically and mentally and less mobile, when compared with the middle aged and young. So 'health care' demands top priority for the aged. This is especially true with our country, where the number of people living in poor health has been increasing particularly because of the modern medical technology and the expansion of primary health programs, which have reduced mortality without sufficiently improving levels of health.

THE POLICIES AND PROGRAMMES OF THE GOVERNMENT

The central & the respective state governments of different states recognized their duties and have been making and amending laws to safeguard the general interest of the elderly. In this directions many provisions have been made to the aged at the Federal and legislative level.

CONSTITUTIONAL AND LEGISLATIVE PROVISIONS

According to the Article 41 of Indian Constitution: "The state shall, with in the limits of economic capacity and development, make effective provision for securing the right to work, to education and to public assistance in cases of unemployment, old age, sickness, and disablement." This provision is one of the Directive Principles of the state policy: which are considered as fundamental in the governance of the country. According to Article 37: It shall be the duty of the state to apply these principles in making laws.

Section 125 of the Code of Criminal Procedure 1973 requires every person having sufficient means to maintain his father or mother that are unable to maintain themselves.

The Hindu adoptions and maintenance Act 1956, Section 20(3), lays down that it is the obligation of a person to maintain his or her aged or infirm parents.

Concern has been expressed from time to time for the care of aged people, particularly those who have no means of support and no near kin to look after them. The problem of care of such people has received attention of several committees and of the Government.

The study group on Income and wages (1978) recognized the needs of old persons not covered by pension or other retirement benefits and suggested that there should be some standardization of the criteria adopted by different states for old age pensions (non-contributory) to the destitute old.

The seventh Finance Commission noted that varying situation in regard to old age pensions (non-contributory) public assistance in different states and observed that it is desirable to have some uniformity in this regard between the states. The sixth Five-year plan of India mentions about the aged, the infirm, and the need for development programs to meet their wants. Of late, aged people are given a new status 'Senior citizens'. They are provided with various facilities such as concessions in Railways and state owned Road transport services etc.

ROLE OF VOLUNTARY ORGANIZATIONS

Voluntary organizations in India have been playing a pioneering role in the care of aged and have shown considerable adaptability and flexibility in meeting the various social service needs of the elderly. In recent years several national level and state level voluntary organizations have been setup for promoting the welfare of the elderly, for urging a greater national priority to their problems and needs, for organizing services. It is identified, recently, that there are around 400 non-governmental organizations working in the field of the welfare of the aged in India. They provide a wide range of services, residential care, day care, geriatric care, medical & psychiatric care, recreation, financial assistance, counseling etc. However, the majority of the agencies and the service, are meant for urbanites. Voluntary agencies have also been active in conducting studies on the problems needs of the elderly and in organizing discussion/seminars/workshops not only on the needs of the elderly but also on the contributions that they can make.

PERSPECTIVES OF THE AGED

From the analysis of the world demographic trends, it is observed that in 21st century the percentage of the aged to the total population is increasing continuously. However, the quantum of the aged to the total population in the more developed nations would work out to be, more than the world's average. This will be less than the world's average for the less developed regions. India being a

developing country, its quantum of the aged to the total population in 21st century works to be almost close to the world's average. This trend of increase of the aged is likely to be accentuated with the result of improved expectancy of life at birth as well as at later stage of an individual. In all probability in 21st century, there will a large number of people 60, who have single status-hood.

In view of the increasing acceptance of small family norm and growing urbanization, the aged are likely to be more vulnerable to their care by their offspring. Along with the existing problems the aged will have to experience additional problems such as deprivation of further status, loneliness coupled with psychological tensions and like, due to faster rates of mobility of population from rural to urban centers. As a result the family system in India, long known for its cohesive and filial relations, it vexed on one hand failing to keep the elderly happy and on the other not prepared at the same time allowing them to join the institutional care centers.

Both the center and state government, keeping in view of the problems of the aged, have been making time to time various laws & provisions to combat this social menace. For instance the employees of the organized sectors at the time of retirement are given with terminal benefits, to enable them to lead a peaceful retired life. Also there are different study groups, constituted to look into the problems of the aged, have recommended old age pensions (non-contributory Public assistance). Added to this, there are a good number of schemes to help destitute aged, widows' etc. A few concessions are also there for the aged, like tax rebate for those who come under tax brackets; Senior citizen concessions etc. It is noted by some studies that the schemes are really nice, but they are not reaching the concerned; in the letter and spirit of the scheme. This may be probably, because of the illiteracy among the aged and no proper publicity in the rural areas about such schemes. If these two factors are taken care, the schemes floated for the welfare of the aged will be a success.

There are certain positive factors associated with the problems of the aged. In rural areas they find some sort of employment and make their lives economically better. They don't rate themselves as sick, unless, they are affected severely by certain incurable diseases. But their co-eaves in urban centers face problems ranging from pocket money to health care. In order to overcome these problems, the aged need, Non-Institutional care that takes care of the aged day & night. Such centers should cater the needs of all such aged population, coming from different strata.

Medical care is indispensable for the aged, wherever they are. In this direction, the government hospitals should open separate, outpatient counters and special wards for

in-patients of this category. Voluntary organizations which are basically urban based should provide services to the aged in villages also. Psychological problems-loss of status, and loneliness, are considered to be equally serious with the aged. These problems can be solved with in the four walls of the family. It only requires the involvement of aged in all such matters, where they should not feel they are not consulted to.

It is crystal clear that the 21st is going to witness the increasing of the aged at very faster rate and their problems in multitude. Therefore, top priority should be given to arrest the population from growing any further. It is apt to remember the Executive Director of the United Nations Population Fund (UNFPA). Who is optimistic of combating the population of the world at 7.9 billion by the year 2025. Till then it is our onus, to ensure a good living for their peaceful old age. For the act of which we shall remain ever grateful, as their real heirs in the true spirit of Indians.

GROWTH OF AGED POPULATIONS

These United Nations (UN) statistics illustrate the explosive growth of aged populations around the world. By 2050, for example, nearly 30 per cent of the people living in the world's most developed countries-those in North America, Western Europe, and parts of Asia-will be at least 60 years old, up from less than 15 per cent in 1950.

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A STUDY ON EFFECTIVENESS OF CONCEPT ATTAINMENT MODEL ON ACHIEVEMENT, RETENTION AND ATTITUDE TOWARDS SCIENCE AMONG 9th GRADE STUDENTS"

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This study aimed at finding the Impact of Concept Attainment Model on Achievement, Retention and Attitude towards Science of 9Th Grade students. A sample of 100 Students of 9th Grade was selected randomly from Bellary city. Among them 50 Students were randomly selected for both controlled and Experimental group. In this study experimental-control (pre-test post-test) parallel group design was used. The study was completed in two stages: Pre-test stage and Post-test stage. The data were collected and analyzed with the help of Differential analyses i.e. t-test. A significant difference was found between the Pre-Test and Post-Test scores of Achievement, Retention, and Attitude towards Science of both experimental and controlled group. The study reveals that the gain of achievement, retention and Attitude towards science of experimental group is higher than the control group. It shows that the treatment given to experimental group through Concept Attainment Model is more effective than the Traditional method of teaching.

1. INTRODUCTION

It goes without saying that Teaching -Learning is as old as is the humanity. Some sort of teaching has always been going on which might have been of any level. Improvements in the process of Teaching have been made from time to time by the teachers. Some research workers, intellectuals, administrators etc. have been making special efforts to improve the teaching process.

The objectives of education have changed from time to time and so has our concept of teaching. What we teach? And how we teach? Depends to a great extent on what we want to achieve. Teaching is both an art and science. Able teachers are always find ways and means to improve their teaching techniques. The improvement of teacher by employing newer methods of teaching is a need of the locus. The ways the knowledge, skills and values are delivered to the learner have a meaning both for a teacher and the student.

The most recent concept of teaching is: teach the child how to learn, how to discover, how to think and how to inquire. The emphasis is upon 'know how' rather than 'know what. In modern world, knowledge increases at a terrific pace and social change is very rapid. Education can no longer be taken as the preparation of a finished product. Due to science and technological advancement the entire world has been shrunken in its space and time. And it also impacts on all human activities. So that teacher should adopt dynamic methods to cater the needs and interest of the children. For that teacher should provide conducive environment for the full development of the learner's potentials.

At present, instructional strategies are being developed for effective science teaching. The models can create most suitable environment and stimuli for the student to Achieve concepts in science. The concept Attainment Model (CAM) is designed and developed to teach concepts and to help students to become more efficient at learning.

The CAM developed by Bruner succeeded in the learning the concepts. So a genuine interest was aroused in the minds of investigator to prove the effectiveness of CAM on secondary school students with special reference to Academic achievement, Attitude towards science and retention.

CONCEPT ATTAINMENT MODEL

Teaching models are **prescriptive teaching strategies** designed to accomplish particular instructional goals. They are perspective in that the teacher's responsibilities during the planning, implementing and assessment stages of instruction are clearly defined.

- Paul.D.Eggen et.al (1979)

The concept attainment model is an inductive teaching strategy designed to help **students of all ages reinforce their understanding of concepts and practice hypothesis testing**. The models use positive and negative examples to illustrate concepts of simple and complex.

The design of this model first suggested by **Joyce and weil** (1972) is based on the work of Bruner, Goodnow, and Austin (1956). Who investigated how different variables affect the concept learning process. The concept attainment model is also useful for giving students experience with the scientific method and particularly with hypothesis testing.

OBJECTIVES OF STUDY

The main objective of this study was to find out the effectiveness of CAM on achievement, retention and Attitude Towards science of ninth grade students. This is further explicated by the following specific objectives :

- 1) To study the effectiveness of Concept Attainment Model (CAM) and Traditional Method (TM) of instruction on the achievement of ninth graders
- 2) To find out the effectiveness of CAM and TM on the Attitude towards Science of the ninth grade students.
- 3) To find out the effectiveness of CAM and TM on the Retention of the ninth grade students.

HYPOTHESIS

- 1) There is no significant difference between experimental and control groups with respect to pre test, post test and gain of pre and post test achievement in science of 9th standard students.
- 2) There is no significant difference between experimental and control groups with respect to pre test, post test and gain of pre and post test attitude towards science of 9th standard students.
- 3) There is no significant difference between experimental and control groups with respect to pre test, post test and gain of pre and post test retention in science of 9th standard students.

METHOD

In this study experimental-control (pre-test post-test) parallel group design was used. The study was completed in two stages: Pre-test stage and Post-test stage. The study was conducted in the Ex. Municipal high school Bellary. The sample selected was purposive but representative of the population. Out of 150 pupils studying in class 9th of the said school, 100 Pupils were selected on the basis of intelligence by administering R.P.M (Raven's Progressive Matrices) and were randomly assigned to two groups (on the basis of Intelligence viz.above Average, Average and below Average) to be taught through two different methods.

TOOLS

In order to collect the data pertaining to achievement, Attitude towards Science and Retention, following tools were used :

- 1) Achievement test which was developed and standardized by the investigator.
- 2) Avinash grewal Science Attitude scale
- 3) Retention test which was developed and standardized by the investigator.

RESULTS AND DISCUSSION

Comparison of experiment and control groups, with

respect to pre test and post test scores of achievement, attitude towards science and retention in science of 9th grade students. To achieve these hypothesis, the unpaired t-test was applied and results represented in the following table.

Hypothesis: 1) There is no significant difference between experiment and control group with respect to pre test, post test and gain of pre and post test achievement in science of 9th standard students

Table :1) Results of t-test between experimental and control groups with respect to pre test, post test and gain of pre and post test achievement in science of 9th Standard Students

Variable	Groups	Mean	SD	t-value	p-value	Signi.
Pre test	Control	42.58	16.77	0.1407	0.8884	No
	Experiment	42.08	18.71			
Post test	Control	43.06	17.11	-3.7270	0.0003	Yes
	Experiment	55.78	17.02			
Gain score	Control	0.48	1.80	-17.2981	0.0000	Yes
	Experiment	13.70	5.10			

From the results of the above table, it can be seen that,

1. Control and Experiment groups do not differ significantly with respect to pretest scores achievement in Science of 9th standard students ($t=0.1407$, $p>0.05$) at 5% level of significance. Hence, the null hypothesis is accepted and alternative hypothesis is rejected. **It means that, the mean score of pretest achievement in Science of 9th standard students is similar in control and Experiment groups.**
2. Control and Experiment groups differ significantly with respect to post test scores achievement in Science of 9th standard students ($t=-3.7270$, $p<0.05$) at 5% level of significance. Hence, the null hypothesis is rejected and alternative hypothesis is accepted. **It means that, the mean score of posttest achievement in Science of 9th standard students is higher in experimental group as compared to control group.** Control and Experiment groups differ significantly with respect to gain of pre and post test scores achievement in Science of 9th standard students ($t=-17.2981$, $p<0.05$) at 5% level of significance. Hence, the null hypothesis is rejected and alternative hypothesis is accepted. It means that, the mean score of gain of pre and posttest achievement in Science of 9th standard students is higher in experimental group as compared to control group.

Hypothesis :2) There is no significant difference between experiment and control groups with respect to pre test, post test and gain of pre and post test attitude towards science of 9th standard students.

Table :2) Results of t-test between experiment and control groups with respect to pre test, post test and gain of pre and post test attitude towards science of 9th Standard Students

Variable	Groups	Mean	SD	t-value	p-value	Signi.
Pre test	Control	38.56	10.30	0.0223	0.9823	No
	Experiment	38.52	7.42			
Post test	Control	41.84	9.16	-17.7710	0.0000	Yes
	Experiment	74.02	8.94			
Gain score	Control	3.28	12.19	-13.7256	0.0000	Yes
	Experiment	35.50	11.26			

From the results of the above table, it can be seen that,

- Control and Experiment groups do not differ significantly with respect to pretest scores attitude towards science of 9th standard students ($t = 0.0223$, $p > 0.05$) at 5% level of significance. Hence, the null hypothesis is accepted and alternative hypothesis is rejected. It means that, the mean score of pretest attitude towards science of 9th standard students is similar in control and Experiment groups.
- Control and Experiment groups differ significantly with respect to post test scores attitude towards science of 9th standard students ($t = -17.7710$, $p < 0.05$) at 5% level of significance. Hence, the null hypothesis is rejected and alternative hypothesis is accepted. **It means that, the mean score of posttest attitude towards science of 9th standard students is higher in experimental group as compared to control group.**

Control and Experimental groups differ significantly with respect to gain of pre and post test scores of attitude towards science of 9th standard students ($t = -13.7256$, $p < 0.05$) at 5% level of significance. Hence, the null hypothesis is rejected and alternative hypothesis is accepted. It means that, the mean score of gain of pre and post test attitude towards science of 9th standard students is higher in experimental group as compared to control group.

Hypothesis : 3) There is no significant difference between experimental and control groups with respect to pre test, post test and gain of pre and post test retention in science of 9th standard students

Table : 3) Results of t-test between experimental and control groups with respect to pre test, post test and gain of pre and post test retention in science of 9th Standard Students

Variable	Groups	Mean	SD	t-value	p-value	Signi.
Pre test	Control	42.58	16.77	0.1407	0.8884	No
	Experiment	42.08	18.71			
Post test	Control	42.12	16.52	-4.7401	0.0000	Yes
	Experiment	57.94	16.85			
Gain score	Control	0.46	2.92	-19.4301	0.0000	Yes
	Experiment	15.86	5.17			

From the results of the above table, it can be seen that,

- Control and Experiment groups do not differ significantly with respect to pre-test scores retention in science of 9th standard students ($t = 0.1407$, $p > 0.05$) at 5% level of significance. Hence, the null hypothesis is accepted and alternative hypothesis is rejected. **It means that, the mean score of pretest retention in science of 9th standard students is similar in control and Experimental groups.**
- Control and Experimental groups differ significantly with respect to post- test scores retention in science of 9th standard students ($t = -4.7401$, $p < 0.05$) at 5% level of significance. Hence, the null hypothesis is rejected and alternative hypothesis is accepted. **It means that, the mean score of post-test retention in science of 9th standard students is higher in experimental as compared to control group.**

Control and Experiment groups differ significantly with respect to gain of pre and post test scores retention in science of 9th standard students ($t = -19.4301$, $p < 0.05$) at 5% level of significance. Hence, the null hypothesis is rejected and alternative hypothesis is accepted. It means that, the mean score of gain of pre and posttest retention in science of 9th standard students is higher in experiment as compared to control group.

EDUCATIONAL IMPLICATIONS

CAM provides a chance to analyze the students thinking process and to help them develop more effective strategies for thinking and concept attainment.

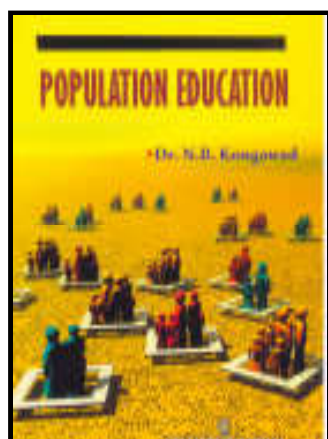
In this study CAM has been found to facilitate achievement of learners in science. This has an important implication for teaching science to the school children. Therefore, the science teachers may be trained in using CAM for teaching of science.

Keeping in view the limitations of the present study, and the constraints under which it was conducted, the findings do not warrant wide generalization. It is, therefore, suggested that replication of this study on a larger sample of different age-groups, grade levels, subject areas, sex, socio-economic status and intelligence level, be made to arrive at more reliable and precise results.

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STUDY OF LIFE SKILLS IN I PUC TEXTS OF KARNATAKA STATE

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ABSTRACT

PUC I year textbooks in Biology (Rao, 2006) following the State syllabus have been analysed for life skills incorporated. The CBSE and State syllabi (2007-2008) have been compared and it has been found that there is more of content matter in the CBSE syllabi than in the PUC Syllabi. A check-list of life skills and sub-skills included in the biology text (Rao, 2006) has been prepared using a standardized evaluation tool (Author, 2011). It has been found that more number of life skills are included in the PUC texts in the form of experiments and activities.

1. INTRODUCTION

The collegiate system of education in Karnataka visualises the Biology Syllabus and its study in two stages, viz. I PUC(Pre-university college) and II PUC. Unlike the 10+2 systems of CBSE and Navodaya, the PUC classes which are the equivalents of 11th and 12th standards of the above organisations are a part of collegiate education.

A bird's eye view of the CBSE and NCERT syllabi (NCF, 2005) have shown a lot of similarity in the construction of the theoretical content of the syllabi, this being perhaps because the NCF pattern has been followed by the CBSE but there are differences in the practicals. A list of experiments for 30 marks has been spelt out in the CBSE syllabus whereas the NCF (2005, Vol. II) just explains or details the practicals to be done. The PUC Syllabus (2007-2008) outlines the topics of study in theory (general biology, botany and zoology) and practicals.

NEED FOR THE STUDY

Life skills are the abilities for adaptive and positive behaviour that enable individuals to deal effectively with the demands and challenges of everyday life (WHO, 1994,1997). Life skills help us improve the quality of our lives and are an important component of science education, art education, health education, citizenship, inclusive education and peace education. The purpose of taking the PUC syllabi for study was for comparison with the CBSE syllabi for units of study and content therein. This was to facilitate understanding variation and depth in content at the state and CBSE levels and also to gauge the extent of life skills incorporated into the syllabi.

METHODOLOGY

The syllabi(2007-2008) and texts(Rao, 2006) were procured. Using a standardized Evaluation Tool (Table 1)) the PUC I texts were screened and a checklist of content material containing life skills prepared. The CBSE and PUC syllabi have been compared unitwise and topicwise.

Table 1 : Evaluation tool

Ch.No.	Units (Major Skills and Life Skills)	Generic Skills Included									
		Solving		Thinking		Relation ship		Under standing		Coping skills	
		Problem solving	Decision making	Critical thinking	Creative thinking	Interpersonal relationship	Effective Communication	Empathy	Self-awareness	Coping with emotions	Coping with stress
1											
2											
3											
4											
5											

LIMITATIONS

Only important yet common problems and activities have been listed out from the text in order to highlight life skills involved therein. No experiments could be listed. The learning process of the life skills have been transformed into questionnaires for statistical studies and not elaborated in the check-list here.

* RESULTS

Scientific skills or seven life skill pairs have emerged through an analysis of the checklist. These are decision-making and critical thinking, effective communication, creative thinking, and self-awareness, and problem - solving .

These are mostly thinking, solving and understanding skills. Coping and relationship skills are conspicuous by their absence. A comparison with the CBSE (NCF, 2005) shows status quo in CBSE with the last two pairs of skills going amiss. However, a lot of less content goes into the constitution of CBSE syllabus. The I PUC syllabus includes a wider variety of topics in Botany and Zoology paving way for inclusion of a lot more life skills herein. This necessitated a unit by unit comparison of the two syllabi as follows:

*** RESULTS**

The checklist prepared was as shown in Table 2 below.

Table 2: Checklist of Life skills- I PUC (State) (Rao, S.M., 2006)

Unit No.	Syllabus/ Ch. No.	Q. No.	Activity/ Projects	Experi- ments	Problems	Life Skills	Sub Skills	Learning Process/ NW
Botany	B 2.1/3	1	-	-	What is the physi- cal basis of the cell ?	Effective Commu- nication and self awareness.	Analytical ability Objectivity	
	B 2.2/4	2	-	-	Reason out why chromosomes are Vehicles of heredity	Decision making critical thinking	Analytical ability Objectivity	
	B 2.3/5	3	-	-	Why meiosis is called reduction division ?	Critical thinking	Ligical thinking and objectivity	
	B 2.1/3	4	-	-	What is cell theory ?	Decision making critical thinking	Self-knowledge Analytic and synthetic ability	
	B 3.1.2/7	5	-	-	Explain the lytic cycle of T ₄ phage	Critical thinking	Logical thinking	
	B 3.1.3.1/8	6	-	-	Write the role of bacteria in fermen- tation and mainte- nance of ecologi- cal balance	Critical thinking	Analytic and synthetic ability	
	B 3.23/9	7	Draw a neatly labeled sketh of Closterium	-	-	Creative thinking	Innovativeness Elaboration	
	B 5/20	8	-	-	What is pathology ?	Effective communication	Presentation Objectivity	
	B 3.1/1 & 2	9	-	-	What is bio- diversity ?	Effective communication	Presentation Objectivity	
Zoology	Z1.4/21	1	-	-	What are myths? Write a note on any two myths.	Effective communication	Analytical ability Presentation	
	Z2.1/22	2	-	-	Which polysaccha- ride is called queen of gelling agent ?	Decision making	Self knowledge	
	Z2.2/22	3	-	-	How will you differentiate simple protein from conju- gated proteins ?	Critical thinking	Intelligence Logical thinking	
	Z2.4/22	4	-	-	Explain mode of enzyme action with induced fit theory	Critical thinking	Analytical and synthetic ability	
	Z3.2.4/24	5	-	-	Explain genetic drift	Problem solving and critical thinking	Divergent thinking Logical thinking	
	Z4.3.1/26	6	Write - labeled daigram of Ascaris	-	-	Creative thinking	Originality Elaboration	
	Z4.3.2/27	7	-	-	Why is the skin of amphibians smooth moist and richly vascularised ?	Critical thinking	Objectivity	

	Z5/28	8	-	-	Reason out why cockroaches are omnivorous ?	Critical thinking decision making	Logical thinking Rationality	
	Z6.5/25	9	-	-	Why earthworm is called a Farmer's friend ?	Decision making	Synthetic ability	

Table 3 : Comparative study of CBSE XI Std and State I PUC syllabi (2007-2008) in Biology

CBSE	I PUC
I. Diversity in living world Five kingdom classification	Monera;Protista;Mycota;Metaphyta Metazoa
Principles of Classification ICBN	Types;Species Concept;ICBN; Classification by Linnaeus
Animal and plant classification - features	
Herbaria, parks, museums, Botanical gardens	Herbaria, parks, museums, gardensX
II. Structural organisation in animals and plants Tissues (animals and plants);Root, stem, leaf, inflorescence,flower, fruit and seed; Earthworm, cockroach and amphibian systems	Tissues (animals and plants)X;Root, stem, leaf X; inflorescence X(only in pracs);Flower, fruit and seed;Cockroach, earthworm and amphibiansX
III. Cell structure and function Cell wall, cell membrane, cell organelles; Mitosis, meiosis, cell cycle;Chemical constituents of living bodies;Carbohydrates, proteins, lipids, and nucleic acids and enzymes	Cell structure, cell wall, organelles, chromosomes; Mitosis, meiosis X(only in pracs); Biomolecules (carbohydrates, proteins, lipids, enzymes, nucleic acids)
IV. Plant physiology Water and food and gas movement Plants and water Mineral nutrition Respiration Photosynthesis Plant growth and development	Water, food, gas movement X Plants and water X Mineral nutrition Respiration X Photosynthesis X Plant growth and development X
V. Human Physiology Digestion and absorption Breathing and respiration Body fluids and circulation Excretory products and elimination Locomotion;control&co-ordination	X X X X X

Many topics (marked X) are not there in the I PUC syllabi. Human and plant physiology have been totally avoided and neglected along with topics like cell division(mentioned only in practical syllabi), tissues, plant parts(eg., inflorescence mentioned only in practical syllabi) and plant preservation techniques. Topics in general Botany and Zoology have been emphasised, along with classification, economic botany and plant pathology, origin of life and evolution. One thing that sets apart the I PUC syllabus is the inclusion of topics on animal resources in an extensive and interesting and informative way. This includes sericulture, aquaculture and dairy culture and poultry and vermiculture, these being the applied aspects of theoretical knowledge and are important for the development of life skills.

To conclude, a lot more of skills than in CBSE are included in the PUC syllabus in the form of experiments and animal resources. Valuable life skills and their

development are left out when these life skills are not introduced at this stage.

ACKNOWLEDGEMENTS

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- Continued on Page No. 49

URBAN LAND USE ANALYSIS : A CASE STUDY OF GADAG-BETGERI URBAN UNIT

✉ Gurappa S. Yetnetti, P.P.G. Arts College, Gadag.

✉ Prof. S. I. Biradar, Professor and Chairman Dept. of Studies in Geography Karnataka University, Dharwad.

ABSTRACT

(Land is another important element in urban areas. Its management guides its proper use making available required areas for various activities. The urban land use studies, which are the basic information, required for town planning, knowledge of how a town or city is using its land is a starting point for planning the town or city. 'Land' is defined always has site or locational attributes. Land use in urban areas has been becoming more and more complex and equally problematic due to scarcity of land. The present study is based on both primary and secondary data and supplement with field observation. The information data collection in the field was systematically classified and analyzed with the help of statistical figures, charts and computer generated maps. Hence, the study of urban land use has been gaining more and more importance now a day. It is in the view of this the present problem entitle "Urban land use Analysis: A case study of Gadag-Betageri Urban area" has been selected.)

INTRODUCTION

The term 'Land Use' is generally adapted to mean man's activities which directly related to the land. Land use can be defined as activity or development which occupies land. It could also be called as 'human use of land' which means that this idea deals has much with people as with land.

The urban land use studies, which are the basic information required for town planning. Knowledge of how a town or city is using its land is a starting point for planning the town or city. Detailed information regarding the use to which each property of land is being put and of the use, character condition, height, size of all buildings and structures and their yard spaces is essential for the preparation of master plan.

'Land' however defined, always has site or locational attributes. Any data relating to land, especially data on land use necessarily refers to a defined point in time.

In a modern city, A man lives in piece of land, works on another, shops at third, plays on still others and travels over many other pieces of land in moving from one to other of some, he and his family have exclusive use, if they wish; in many more, he shares use with others, often with large number of people. These relationships are many a time highly complex, yet it is the intricate interweaving of land uses, on various separate tracts, which gives values to each, and which is basic to the whole economy and culture.

In India urban Land use study is of recent origin. Many cities and towns do not possess up to data urban Land use maps. After the advent of the Five year plan programmes in the country, this type of planning or study is connected with urban and regional planning started studies on Land use in urban areas as well as in different regions.

In Karnataka state the studies on urban Land use started in the year 1961, though accurate details on existing

Land use of some of urban centers taken off for planning, a broad analysis of Land use is made.

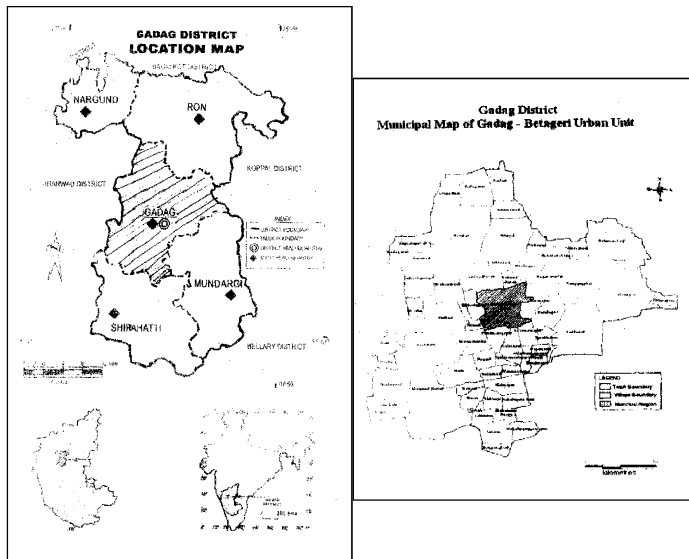
Land use in urban areas has been becoming more and more complex and equally problematic due to scarcity of land. In a modern city people live on one piece of land, work on another, shops at a third, play on still others on a travels over many other pieces of land. Hence, The study of urban land use as been gaining more and more importance now a day. It is in view of this the present problem entitle "Urban Land Use Analysis" of Gadag-Betageri urban area has been selected.

STUDY AREA

Gadag is geographically situated at Latitude 15.25 degree North and Longitude 75.38 degree East at an attitude of 650 meters above MSL in the dry region of Deccan plateau, Gadag is newly formed district head quarters, and it is the second biggest urban center in the undivided Dharwad District. Bangalore, the state capital is at a distance of 480kms. The total geographical area of the Gadag-Betageri urban unit is 3585.48 hectares or 35.85sq km.

The Gadag-Betageri urban region has a railway junction connecting Gadag Hubli, Guntakal and Solapur. Gadag is well connected by road also. The Karwar-Bellary National Highway No 42 passes through city connects Gadag and Poona-Bangalore National Highway No 4 at Hubli at a distance of 55kms. The State Highway and the district roads passes through the city connecting neighbouring taluks of Navalagunda, Naragunda, Mundargi, Koppal, Ron and other important centers like Bijapur, Gulbarga, Raichur, Badami, Iholi and Pattadakallu the famous tourist centers are located in the close vicinity of Gadag at a distance of about 80kms. The nearest Airport is at Hubli which is 55kms. Karwar port is located at 230kms from Gadag. The climate of the region on the whole, is

healthy and agreeable. The year may broadly be divided as, the hot season, starting from the middle of February to the end of May Temperature in Gadag varies from 15-75c to 36-94c. The lowest temperature being in December and the highest being in April. The mean minimum is 19.88c.



OBJECTIVES OF THE STUDY

The present study covers the following objectives.

- To know the Geographical background of the study area.
- To analyze the land use pattern of Gadag-Betageri urban area.

DATA BASE AND METHODOLOGY

The present study is based on both primary and secondary data and supplement with field observation the primary data was collected as for the questioner prepared by the researchers. The concern officials and local people were interview and thus primary data/ information was collected. The researcher had visitant city municipal corporation Gadag. The urban development authority Gadag. The K.S.R.T.C officers, The P.W.D. office Gadag and a number of other public and semipublic offices. The secondary data was also collected from sources of district statistical hand book Gadag 2007 and 2008. Gadag District census hand book 2001, 1991, 1981, and 1971. The secondary data was also collected from various booklets, published by the government of Karnataka. The study area was extensively observed by the researcher. The information/data collection in the field was systematically classified and analyzed with the help of statistical figures charts and computer generated maps.

ANLYSIS AND DISCUSSION

Numerous observations have been made on the spatial shapes of cities in the relation to urban growth, urban

planning and technological developments in transportation. To data research on the subject has suffered from the absence of a method for making objective and systematic comparison studies have traditionally used only maps or photographs in an analysis of the shape of cities.

These materials are suited for demonstrating that some urban units have a spatial from radically different from others and they can also types circular, rectangular, star shape and elongated to mention only a few common patterns. However neither maps nor photographs by themselves provide a bases for expressing the nature of spatial differences in a standardize way.

The method of measurement purpose here is perhaps most relevant to problems and concerns of urban planning, urban ecology and urban geography. On the surface least it would appear that the shape of urban units is like to such problems as the organization of municipal transportation, the management of traffic, zoning and the location of urban sub centers. The position of a territorial division relative to the shape of the urban area should perhaps be taken into account, as well as distance from center of the city.

PETTER HAGGETTE METHOD

$$SI = r/R \times 100 \quad (\text{where as } r = \text{Radius of Small circle})$$

$$R = \text{Radius of Big circle}$$

$$= 5.5/10 \times 100 \quad (5.5 \times 100 = 0.55)$$

$$= 0.55 \times 100$$

$$= 55\%$$

The shape of Gadag-Betageri urban unit is 55%. This shape comes under Rhambas shape.

GIBBS METHOD

$$MC = 100 \times Aa / 3.14 (Dp/2)^2$$

where as MC = measure of circularity of shape.

$$= 100 \times 35.86 / 3.14 (53.6/2)^2$$

Aa = Actual area of the map

$$= 3585 / 3.14 (26.8)^2$$

Dp = Distance between the two most distance points

$$= 3585 / 3.14 \times 718.24$$

on the boundary of the map

$$= 3585 / 2255.2736$$

$$= 1.58\%$$

The shape index of Gadag-Betageri urban unit is- 1.58%.

LAND USE UNITS

The land use units in any urban area develop in accordance with the need and requirements of the people living in a specific region. The following are the land use units found in Gadag-Betageri urban region.

RESIDENTIAL AREA

The earlier development of the city took place in Shapurpet, Jawal area, around Shri Veernarayan temple, Vakkalgeri and betageri. These areas are thickly populated with densities of more than 330 PPH. The later developments have taken place in the eastern side of Pala-Badami road and southern side of Karwar-Bellary road.

In Betageri, the earlier developments are concentrated between Pala-Badami road and railway line. Residential units with handlooms are existing in this area and the gross density is 330 PPH. The later developments in Betageri

are along northern side of Pala-Badami road where a planned residential area with broad roads has been developed during the British period.

According to 1991 census the city had a housing stock of 23456 houses for a population of 134051. As per 2001 census there are 29412 houses for a population of 154849, which shows there is a rise of 5956 houses during the decade.

A BIRD VIEW OF RESIDENTIAL AREA-2001

The major institutions providing residential accommodation under the housing programme in the city is given below;

Table 1. Residential Area

Sl. No.	Name of Organization/Institution	No. of Quarters
1.	Karnataka Housing Board	1010 No's
2.	Municipal Quarters	204 No's
3.	P.W.D. Quarters	27 No's
4.	K.P.T.C.L. Quarters	34 No's
5.	Karnataka Police Quarters	324 No's
6.	Medical and Health Department	02 No's
7.	Post and Telephone Department	66 No's
8.	South Central Railway Staff Quarters	534's

Source: As per Urban development Authority-2004.

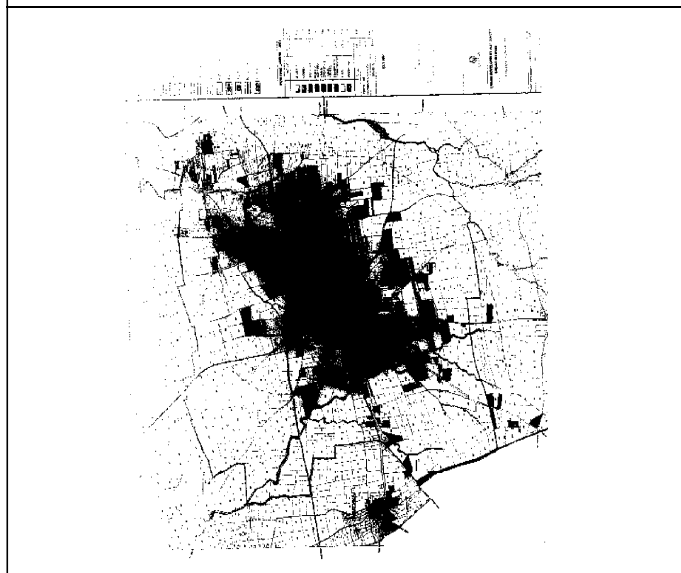
Badami road. The A.P.M.C. is serving to the entire region, mainly deals with Cotton, Oil seeds and Pulses.

The industries occupying an area of 65.14 hectares, amount for 4.49% of the total built up area. This area includes all the medium and light industries and service industries. All the medium and light industries are mostly agro-based industries. In the field of industrial activities Gadag has been known for its handloom industry. The city has a number of ginning factories. About 34 units are engaged in manufacture of cotton textiles. More than 40 units are engaged in manufacture of edible oil other allied

Table-2: Land Use Pattern of Gadag-Betageri Urban Unit 2001

Sl. No.	Land use category	Area in hectares	Percentage (%)
1.	Residential	496.27	34.22
2.	Commercial	74.57	5.14
3.	Industrial	65.14	4.49
4.	Public and Semi public	123.37	8.51
5.	Parks, Play grounds and other open spaces	78.85	5.44
6.	Public utilities	6.70	0.46
7.	Transport and communication	305.50	21.07
8.	Vacant	262.75	18.12
9.	Water sheet	36.96	2.55

EXISTING MAP OF GADAG - BETGERI URBAN UNIT



COMMERCIAL AREA AND CBD

About 5.14% of developed area comes under commercial use with an extent of 74.57 hectares. The central business of the district is located in old part of Gadag i.e. pala-Badami road on east, Hubli-Guntur line on north, Karwar-Bellary state highway on south extension. Apart from this, there is no other organized market in the city except the road side shops along some important roads like Market road, Tontadarya road, Someshwar road, Bank road, pala-Badami road, Old saraf market road, Parswanath road, Basaveshwar Road and K. C. Rani Road. In Betageri shopping is concentrated along pala-Badami road, Rajendraprasad road and Tenginkai Bazar road. The Municipality has built one cloth market to facilitate the wholesale and retail cloth trade in the city center. A vegetable market has built by the Municipality. The city has 25 banking institutions including the branches of National banks.

INDUSTRIAL AREA

The agricultural produce Marketing Committee is functioning very well and it is located in the East of Pala-

products. In addition Gadag accounts for a large number of general engineering units and are mostly engaged in manufacture of agricultural implements, components of machines, steel furniture etc. Printing and processing unit's for more than 60 where as the Saw mills account for more than 20 units.

AREA UNDER PUBLIC AND SEMI PUBLIC USE

The public and semi public use accounts for 8.51% of the total developed area which consists of 123.37 hectare. This includes Government, Quasi government (semi-Govt.) institutions, and Religious and Cultural centers. After the district head quarters, the government officers are functioning in private rented buildings. The major shape of this public area is occupied under J.T.College, Tontadarya Engineering institutions, Samiti School, Model high school, Ayurvedic College and Municipal high school.

AREA UNDER PARKS AND PLAY GROUNDS

The area coming under parks and play grounds is only 78.85 hectares accounting only 5.44% of the total developed area. K.C.Park, Veerananarayan van and new Stadium are the major uses under this category, except J.T.College most of the Educational institutions do not have their developed play grounds. So far no effort has been taken to develop the park areas provided in the private layouts. Recently effort has been made to involve the private associations in the field and nearly sixteen parks have been interested to them.

AREA UNDER TRANSPORTATION

Transportation and communication use comprising as area of 305.50 hectares, works out to 21.07% of the total developed area. Recently the NWKRTC is constructing a new Bus-stand by the side of Mundargi road in an area of 4.05 hectares. In the Gadag-Betageri there are two depots one at Gadag and another one betageri. Daily 1.24 lakhs people are floating this type of transport.

BIRD VIEW OF GADAG-BETGERI DAILY BUS TRANSPORT AS BELOW

Table-3 : Gadag Betageri Daily Bus Transport

A. City Service

	Gadag	Betageri
Schedule	9	11
KMS	1469	1833

B. Sub-Urban Service (with in 14 KMS)

	Gadag	Betageri
Schedule	8	5
KMS	2293	1165

C. Ordinary Service (Rural area)

	Gadag	Betageri
Schedule	37	16
KMS	13854	5471

D. Express Service

	Gadag	Betageri
Schedule	40	29
KMS	14913	10382

**Table-4 Property of Gadag N.W.K.R.T.C. Division
(Land usage of transportation facility)**

Sl. No.	Name of the Place	Area
1.	Gadag Depot	5.6 acre
2.	Betageri Depot	5 acre
3.	Gadag New Bus stand	10 acre
4.	Gadag Old Bus stand	2.18 gunta
5.	Betageri Bus stand	7.2 gunta
6.	Division Office and work shop	1.2 acre
7.	Gadag Depot main quarters	910 sq kms

Table-5 City Shelters

Sl. No.	Name of the Place	Area
1.	One at near German hospital	37.4 sq kms
2.	At Aishwarya colony	37.4 sq kms
3.	At K.H.D.C. Nekar colony	37.4 sq kms

Source: As per N W K R T C Gadag Division Office 2010.

AREA UNDER WATER BODIES

Bheeshma tank which is located in the central part of the city is a major water body, and areas under water sheet account for 36.96 hectares (2.55%) in future plan.

AREA UNDER OPEN SPACE

Another important aspect is that nearly 262.75 hectare of land is vacant within the developed area, which works out to 18.12% of the total developed area. This area is available for future development and can be best utilized for residential purpose.

RUNNING BOUNDARY OF THE GADAG-BETAGERI URBAN UNIT

The boundary line commences from the North-West corner of S.No. 491 of Gadag village and runs along the Northern boundary of Gadag village crosses Hombal road and Gadag-Solapur Railway line and continuous to run along the northern boundaries of Gadag, Chikoppa and

Hirekoppa villages till it reach the North-East corner of the R.S.No 105 of Hirekoppa village. The boundary then turns towards south and runs along the Eastern boundary of Hirekoppa village till it reaches the village boundary of Nagasamudra where it is turns towards East and runs along the Northern boundary of Nagasamudra village till it reaches the Northern corner of R.S.No 73 of Nagasamudra village. The boundary then towards south and runs along Eastern village boundaries of Nagasamudra and Narasapur crosses the Gadag-Betageri railway line and continuous to run towards south along the eastern village boundary of Hatalageri till it reaches the South-East corner of R.S.No 133 of Hatalageri village. The boundary then turns towards west and runs along the southern boundary of Hatalageri village till it reaches the village boundary of Adavi-Somapur where it turns towards south and runs along the eastern village corner of R.S.No 107 of Adavi-Somapur after crossing the Karwar-Bellary road. The boundary then turns towards west and runs along the southern boundary of Adavi-Somapur, till it reaches the south-east corner of R.S.No 1048 of Kalasapur village, the boundary of Kalasapur village till it reaches the village boundary of Binkadakatte village, crosses the Hubli-Gadag road and Hubli-Gadag Railway line and meets the north-west corner of R.S.No 491 of Gadag village from where the boundary commenced.

SUMMARY

The term 'Land Use' is generally adapted to mean man's activities which directly related to the land. Land use can be defined as activity or development which occupies land. It could also be called as 'human use of land' which means that this idea deals as much with people as with land. In a modern city, man lives in piece of land, works on another, shop at a third, plays on still others and travels over many other pieces of land in moving from one to the other of some, he and his family have exclusive use, if they wish; in many more, he share use with others, often with large number of people. These relationships are many a time highly complex, yet it is the intricate interweaving of Land uses, on various separate tracts, which gives values to each, and which is basic to the whole economy and coulter. . As per 2001 census there are 29412 houses for a population of 154849, which shows there is a rise of 5956 houses during the decade. About 5.14% of developed area comes under commercial use with an extent of 74.57 hectares. The central business district is located in old part of Gadag i.e. Pala-Badami Road on east, Hubli-Guntur railway line on north, Karwar-Bellary state highway of south extends. The industries occupying an area of 65.14 hectares, amount for 4.49% of the total built up area. This area includes all the medium and light industries and service industries. The area includes all the medium and

light industries and service industries. The area coming under parks and play grounds is only 78.85 hectares accounting only 5.44% of the total developed area. Transport and communication use comprising an area of 305.50 hectares, works out to 21.07% of the total developed area. Bheeshma tank which is located in the central part of the city is a major water body, and areas under water sheet account for 36.96 hectares (2.55%) in future plan. Another important aspect is that nearly 262.75 hectare of land is vacant within the developed area, which works out to 18.12% of the total developed area.

FINDINGS

Land use pattern of each city is unique. The cities contain residential, commercial and industrial areas in general. The arrangement of these land use can be understand by comparing them with the theoretical land use models viz: concentric zone theory of Burgess, sector theory of Homer Hoyt, multiple nuclei theory of harries and Ullman.

- a) From the land use analysis of Gadag-Betageri urban region it is found that the urban unit under study not fully and properly resembles to any theoretical land use models.
- b) There are no concentric zones of definite land use type in the study region.
- c) There are no clearly developed sectors of land use in the study region.
- d) It is found that the urban unit of Gadag-Betageri roughly represents the multiple nuclei model of Harries and Ullman.

The CBD is developed in the central part of Southern region of the twin cities. Major commercial activities are concentrated in this area.

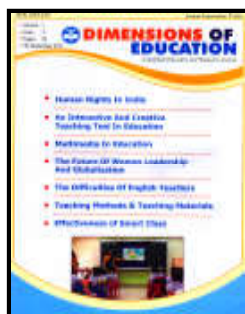
Such commercial areas of smaller magnitude are being developed in the central part of the Northern region, and in the central part of western region, and also in eastern region.

- e) The residential colonies have been developed in almost all parts of the twin cities adjacent to the commercial areas.
- f) The industrial area has been spread in entire central part of the twin cities, and also in peripheral areas particularly in southern and western parts of the twin cities.
- g) The industrial area is also found in the satellite towns such as Narasapur and Binkadakatti.

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