To,

The
Principal
D.I.E.T, Dharwad

SUB: For permission to grant a leave.

Sir,

As subject cited above I am unable to attend office work on 3rd October 2008 due to some domestic work. I hope you will oblige and take needful action.

Thanking you,

You're faithfully

Place: Dharwad (Smt.Shobha.Naikar)
Date: 27 -09-2008

Programmes and Activities

The NCERT undertakes the following programmes and activities.

- **Research**

The NCERT performs the important functions of conducting and supporting educational research and offering training in educational research methodology. Different Departments of the National Institute of Education (NIE), Regional Institutes of Education (RIEs), Central Institute of Educational Technology (CIET) and Pandit Sunderlal Sharma Central Institute of Vocational Education (PSSCIVE) undertake research programmes on different aspects of school education and teacher education. NCERT also supports research programmes of other institutions/organizations by providing financial assistance and academic guidance. Assistance is given to scholars for publication of their Ph.D. theses. Research fellowships are offered to encourage studies in school education to create a pool of competent research workers.

- **Development**

Developmental activities in school education constitute an important function of the NCERT. The major developmental activities include development and renewal of curricula and instructional materials for various levels of school education and making them relevant to changing needs of children and society. The innovative developmental activities include development of curricula and instructional materials in school education in the area of pre-school education, formal and non-formal education, vocationalisation of education and teacher education. Developmental activities are also undertaken in the domains of educational technology, population education, and education of the disabled and other special groups.

- **Training**

Pre-service and in-service training of teachers at various levels; pre-primary, elementary, secondary and higher secondary, vocational education, educational technology, guidance and counseling, and special education are the areas of training in which NCERT works. The pre-service teacher education programmes at the Regional Institutes of Education (RIEs) incorporate many innovative features. The RIEs also undertake the training of key personnel of the states and of state level institutions and training of teacher educators and in-service teachers.

- **Extension**

Various Departments of the NIE, RIEs, CIET and PSSCIVE are engaged in various ways. Constituents of NCERT work in close collaboration with various agencies and institutions in the states. Several programmes are organized in rural and backward areas in order to reach out to the functionaries in these areas where special problems exist and where special efforts are needed. Special programmes are organized for the education of the disadvantaged sections of the society. The extension programmes cover all States and Union Territories of the country.

Publication and Dissemination

NCERT publishes textbooks for different school subjects for Classes I to XII. It also brings out workbooks, teachers' guides, supplementary readers, research reports, etc. In addition, it publishes instructional materials for the use of teacher educators, teacher trainees and in-service teachers. These instructional materials, produced through research and developmental work, serve as models to various agencies in States and Union Territories. These are made available to state level agencies for adoption and/or adaptation. The textbooks are published in English, Hindi and Urdu. For dissemination of educational information, or the NCERT publishes six journals: The *Primary Teacher* is published both in English and Hindi and aims at giving meaningful and relevant educational inputs to primary school teachers for direct use in the classroom; *School Science* serves as an open forum for discussion on various aspects of science education; *Journal of Indian Education* provides a forum for encouraging original and critical thinking in education through discussion on current educational issues; *Indian Educational Review* contains research articles and provides a forum for researchers in education; and *Bharatiya Adhunik Shiksha*, published in Hindi, provides a forum for encouraging critical thinking in education on contemporary issues and for dissemination of educational problems and practices. Besides these, a house journal called *NCERT Newsletter* is also published in English and Hindi (*Shaikshik Darpan*).

Exchange Programmes

NCERT interacts with international organizations such as UNESCO, UNICEF, UNDP, NFPA and the World Bank to study specific educational problems and to arrange training programmes for personnel from other countries. It is one of the Associated Centers of APEID. It also acts as the Secretariat of the National Development Group (NDG) for Educational Innovations. The NCERT has been offering training facilities, usually through attachment programmes and participation in workshops, to educational workers of other countries. The NCERT acts as a major agency for implementing the Bilateral Cultural Exchange Programmes entered into by the Government of India with the governments of other countries in the fields of school education and teacher education. Educational materials are exchanged with other countries. On request, the faculty members are deputed to participate in international conferences, seminars, workshops, symposia, etc.

Piaget's Developmental Stages

JEAN PIAGET IS A SWISS PSYCHOLOGIST who began to study intellectual development (Dembo, 1994). His Cognitive Theory is influential in both education and psychology fields. He proposed that the thinking process will develop through each of the stages until a child can think logically. Understanding cognitive development helps us arrange appropriate lessons and learning environments. An instructor should assess a child's current level of maturity before beginning the instructional design process. The following are four of Piaget's developmental stages:

Sensorimotor Stage (Birth-2 Years)

Even though Piaget was opposed to applying age norms to the stages, most researchers consider approximately the first two years of life to be the Sensorimotor Stage (McCormick, 1997). Infants mainly make use of senses and motor capabilities to experience the environment. For instance, if infants cannot see or touch an object, they stop trying to find it. Once infants develop the capability to recognize that a hidden object still continues to exist, they start searching for it.

The characteristic limitation of this stage is 'thinking only by doing'. The Sensorimotor infant gains physical knowledge.

Preoperational Stage (2-7 Years)

The second stage in Piaget's theory of development coincides the preschool years. Children start to use symbols such as language to represent objects. For instance, the child understands the word "apple" although a real apple is not seen. However, the Preoperational child still learns from concrete evidence while adults can learn in abstract way. The Preoperational child is also unaware of another person's perspective. They exhibit egocentric thought and language.

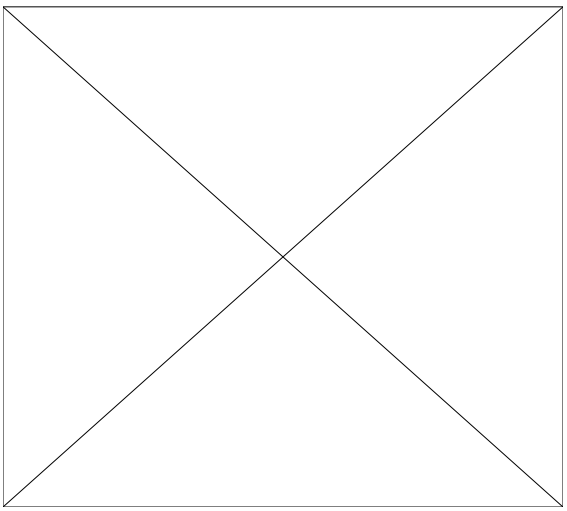

Image 1: The Preoperational child lacks the concept of number conservation.

Here are some limitations of Preoperational thought. To begin with, the Preoperational child lacks the concept of conservation. As shown in Image 1, a child is presented with two rows of apples that contain the same number of apples. While one row is lengthened without any change in the number of apples, the Preoperational child states that the rows are not equivalent. The appearance of the objects gives the wrong impression about them. Children's decisions are dominated by their perceptions.

Conservation does not happen simultaneously in all subject areas. Children can understand conservation of numbers around age 5-6, and understand conservation of substance, or mass around age 7-8.

Additionally, the Preoperational child is likely to center on only one dimension of an event and ignore other important details. Also, children concentrate more on the static features of an event than on the transformations from one state to another.
Last, children in the Preoperational period at times will see some relationships between particular cases while in actuality there is none. For instance, a child might say, "If an apple is red, then a green fruit is not an apple."

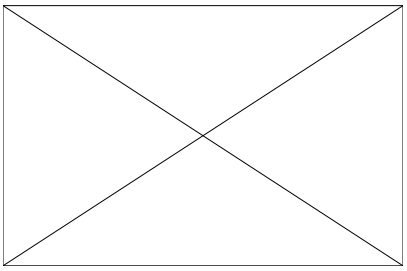

Image 2: The concrete operational is capable of reversible thought only if they operate physical objects.

Concrete Operational Stages (7-11 Years)

The next stage generally represents the elementary grade years. The concrete operational child begins to think logically. Operations are associated with personal experience. Operations are in concrete situation, but not in abstract manipulation.

Concrete operations allow children to classify several classes into a bigger group or to combine a number of classes in any order. Although objects are moved or reordered, no change takes place.

In addition, concrete operations allow children to order objects in terms of more than one dimension. Children at the concrete operational stage can solve conservation tasks. The operational thought is reversible. The concrete operational child can operate an action, and then go back to the original condition. For instance, 3 + 2 = 5 and 5 – 2 = 3 (see Image 2).

The limitation of the third stage of cognitive development is that operations are only carried out on concrete objects, and limited to two characteristics at the same time.

Formal Operational Stage (11 Years and Beyond)

After roughly 11 years old, students have the ability to consider many possibilities for a given condition. They are able to deal with propositions that explain concrete facts. They have the ability to use planning to think ahead.

Most importantly, students at Piaget's final stage of cognitive development increase their ability to think abstractly. They can solve complex and hypothetical problems involving abstract operations.

Formal operational thinkers can recognize and identify a problem. They can state several alternative hypotheses, execute procedures to collect information about the problems to be studied, and test the hypotheses.

For more information on this topic, see the article on Genetic Epistemology.

I. Introduction/Overview

Consider for a moment (if you will) the idea that putting together either a specific lesson or overall approach for language instruction to young learners is very much like planning a meal. Not just any meal, a meal you want your guests to enjoy, with just the right combination of flavors and textures. Well, in my opinion, any impressive meal needs to be complemented with the right wine! So in considering an approach for teaching language to young learners, let us assume that this 'meal' is going to taste better or worse depending on what wine we bring to the table to wash everything down with. Let's go down into the cellar, shall we? Mmm, where is it – I seem to recall a good drop from a French-Swiss winemaker… Yes, here it is, Vintage Piaget! A solid wine with some basic ingredients made to last. Not a perfect drop, a little weak here and there around the edges, but certainly the basic flavor is going to complement our meal very well, as long as we drink it in small amounts at sufficient intervals. Good! Our meal is ready, it's time to go in and teach some new language to kids. Wait! Have I chosen the right bottle? Someone told me not all Piagetian vintages are necessarily good. I'd better take a closer look at the label…

A couple of points need to be made here. I do not mean in any way to demean the overall practice of teaching language to young learners by insinuating it can be related to selecting the right alcohol before you step into a classroom! No, far from it. This is purely metaphorical, and through the example I am trying to illustrate how general background influences and beliefs can add or detract from the overall 'flavor' or appropriateness of the methods we take into our young learner classrooms. Secondly, it is perhaps more fitting to talk about Piaget the 'winemaker' rather than any particular 'vintage' he came up with, for it

is in learning about the winemaker's beliefs, ingredients and techniques (and let's not forget it, his flaws) that we can get ideas on how to come up with our own 'wines for the language learning table'. Thirdly, I have already hinted that some of Piaget's theories are not entirely perfect in their application to a young learner language classroom. However, some of his key concepts are very solid and useful, and I for one have found them very enlightening in considering my own 'approach-making' process.

This article looks at Piaget and his theories in a sequence beginning with Piaget as a theorist (or 'winemaker' in his own right) in terms of what ideas he came up with and how. It then moves on to look at what I believe to be the two most influential theories to emerge in Piagetian philosophy: the concepts of *stages of cognitive development* and *assimilation* and *accommodation* of new knowledge. Finally, I conclude with some general notes about the importance of Piaget's views in application to EFL instruction to young learners, and how we as 'teachers/winemakers' might benefit from them in coming up with our own approaches and techniques.

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II. Piaget the 'Winemaker': A look at the man and his theories

Piaget was a French-Swiss psychologist/epistomologist. He was born in 1896 and died in 1980 whilst still directing the International Center for Genetic Epistemology, an institute he had founded in 1955. He had a long and very accomplished career, and received many prestigious awards for his work in child psychology and theories of cognitive development in children. It should be noted that Piaget's observations and theories were not really targeted at language learning or development but at overall mental growth in general. To him, language was essentially just a representation of mental processes going on in the child's mind, though his later work brought more focus to aspects of interaction and language ability.

One of Piaget's earliest tasks was to standardize Cyril Burt's intelligence/reasoning tests in application to Parisian children, something he found boring and never completed, however it did help to develop a strong interest for him in psychoanalysis and how intelligence could be

observed and studied in developing children. He studied the intellectual development of his own three children from infancy beginning in the mid 1920s, and this along with studies of other children (especially when 'at play' or during interactions with adults) led to publication of some of his early ideas on the development of cognitive ability in children. Over his long career in developing ideas about child psychology, Piaget went on to study thousands of children, and is credited with the major development of relatively new scientific fields such as developmental psychology, cognitive theory and what came to be called genetic epistemology. He was also apparently the first major scientist to take child talk seriously, and his first and most major assertion was that children think in a way very different to the way adults think. One of his most famous statements about cognition in general was that "Intelligence is an adaptation…To say that intelligence is a particular instance of biological adaptation is thus to suppose that it is essentially an organization and that its function is to structure the universe just as the organism structures its immediate environment" (Piaget, 1963, pp. 3-4).

In watching and talking to young children, some of the things Piaget noted included the ideas of *object permanence* (knowing something is still present even if it has been hidden from view), *stability of quantities* despite changes in their physical appearance (the famous example of the same quantity of water presented in two different glasses, one of which is short and broad whereas the other is tall and thin), and *logical inferencing* - linking properties of objects to the way they act (for example, how the size, weight, and material of one ball affects how far it can be tossed or how high it bounces compared to another ball).

A key aspect of Piagetian psychology is the idea that cognitive development in young children stems from action and interaction with the world around them. This begins with physical (or 'concrete') objects in a problem-solving ("thinking something through") sequence that is gradually internalized and develops the child's thinking ability. In terms of how this related to language acquisition in children, Piaget basically saw language as a representative system, one of a variety of 'symbol systems' developed throughout childhood to represent new knowledge acquired as children engage in a physical way with aspects of their environments (Lightbown & Spada, 1999, p. 23).

Piaget is generally most widely known (especially in language learning circles) for his theories about "stages of cognitive development" and the concepts of "assimilation" and "accommodation" (see below), but to focus only on these aspects is to essentially ignore some of the other outstanding contributions he made to a general understanding of how experience and social interaction may develop cognitive ability and find representations in language. Piaget later went on from his early original theories to make observations about the way arguments amongst children are fundamental in the process of developing internalized reasoning skills, just as cooperation in child play can be a major factor in the development of moral judgment (Richard-Amato, 1996, p. 427). In many ways, his theories

were seen as working from the idea that right-hemispheric brain activity (concentrated on action and motor skills) preceded left hemispheric brain activity (generally watching and learning until a sufficient amount has been absorbed that can then be converted into 'language'), a notion which James Asher reiterates as one of the founding principles of his world famous Total Physical Response (TPR) method (Richards & Rodgers, 2001, p. 75). By 1965, some of his theories had evolved to the point that they were considered to be from the same theoretical viewpoint as Vygotsky's in terms of the central role they allocated to social interaction in language learning, and have even been considered fundamental in the growth of relatively contemporary notions such as Cooperative Language Learning (Richards & Rodgers, 2001, p. 194).

Piaget is also well known for his famous debate with the so-called "Father of Linguistics" in Chomsky, in which he argued that language basically represented or expressed a skill of symbolic representation gradually acquired through stages of cognitive development. This view was in contrast to Chomsky's theories about 'Universal Grammar': that a general mechanism in the brain (acquired genetically) accounted for humans' ability to acquire language, which he saw as being far too complex and distinctive to be acquired simply through experience and general cognitive processes (Mitchell & Myles, 2001, p. 17).

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III. Piaget's Stages of Cognitive Development

One of Piaget's central theories was that growth and development of mental skills and knowledge in children necessarily went through a series of defined stages that eventually develop into the ability to engage in formal logical thinking about abstract concepts, a final stage generally believed to be inaccessible to children before the age of about 11. He noted four stages of cognitive development: (1) *Sensorimotor*; (2) *Preoperational*; (3) *Concrete Operational*; and (4) *Formal Operational*.

He also identified characteristics for these stages, and it these that have drawn the most criticism from others in the field of cognitive development in children. Among the characteristics he identified, he asserted that these stages did not vary in their sequence, they were universal (and therefore not culturally specific), the stages and characteristics were generalizable to other functions, each stage represented a logically organized 'whole', and the stage sequences were hierarchical (with each stage incorporating elements from earlier stages to become more differentiated and integrated).

Donaldson (1978) cast the most serious doubts on Piaget's theories of 'stages' and the ability to apply "logical" or "abstract" thought processes before the age of 11 through a series of well-documented experiments that showed fairly convincingly that Piaget's own experiments were either unreliable or not particularly suited to children in terms of showing what they could or couldn't do mentally. An overemphasis on the Piagetian way of "thinking about thinking" is often cited when criticizing educational theories or programs that try to tell learners what stage they are at, and therefore what kind of instruction they need. It is also blamed for overly 'part-based' approaches (parts selected according to what stage children are at and can presumably handle, based on the idea that maturation precedes learning and governs over a sort of "readiness" principle – Richard-Amato, 1996, p. 38) as opposed to more 'holistic' views of experience and learning. As Cameron points out:

An example of how stage theory can lead to restricting children's learning occurred in the UK in the late 1970s and early 1980s. Before children were allowed to start writing sentences, they had to complete sets of 'writing readiness' activities that worked on part-skills. In spending so long on writing patterns and bits of letter shapes, they were missing out on the more holistic experiences that also help children understand the purposes of writing as communication. (Cameron, 2001, p. 4).

So, generally speaking, it could be said that the majority of modern ELT theorists might prefer to leave this particular Piaget vintage in the cellar, saying that it does not make a good accompaniment to 'language learning meals' for young learners. However (as I point out in section V below), it is surprising how fixed this view of language learning stages has become in many contexts, yet in my view it can be too dismissive to completely ignore the possible benefits it can have for general planning considerations for language programs.

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IV. Piaget's Activity Leading to 'Assimilation' and 'Accommodation' Theory

Piaget quite early on came up with a general theory about how physical activity and the associated experience interacting with one's environment leads to mental growth:

Intelligence is assimilation to the extent that it incorporates all the given data of experience within its framework…There can be no doubt either, that mental life is also accommodation

to the environment. Assimilation can never be pure because by incorporating new elements into its earlier schemata the intelligence constantly modifies the latter in order to adjust them to new elements. (Piaget, 1963, p. 6-7).

Well, that might seem a bit wordy and mind-bending at this stage, so let's look at it another way. The way new information is found and utilized is considered to be a conceptual model (or 'schema'). Activity can lead to mental development through two means: 'assimilation' and 'accommodation'. *Assimilation* basically involves an action whereby the child does not actually "change" his or her knowledge, just reapplies the same action in different circumstances (making information 'fit' an existing schema, as it were). *Accommodation*, on the other hand, indicates that some kind of alteration or adjustment of the knowledge occurrs, as a result of interaction with new things present (altering an existing schema to accommodate new information) in the environment.

Take as an example a child who has already fathomed that tapping or hitting a toy ball will cause it to move. The child may then employ the same action to make something else (let's say a toy car) move, in which case we have an example of *assimilation* – the child's knowledge on how to make something move has not essentially changed, it has just been applied to a new object in the child's environment. On the other hand, let's imagine that the child stops 'tapping' the toy car to make it move, and actually places his or her hand on it to either drag or push it along (in the process enabling the child to control the speed of the movement or to 'steer' the car in a particular direction). In this case, we are seeing *accommodation* as the child sees a new possibility and creates new knowledge for him/herself. As we can see from this example, both assimilation and accommodation happen together, and while they begin as general behavior in interaction with the physical environment, eventually they become active thought processes.

The important things to take note of here are that children actively construct new knowledge from themselves, basically by "doing". When they have figured out one way of "doing" they are likely to try and reapply that action with other objects in their environment. In adapting the action and coming up with a more satisfactory result of some kind, they learn a new way of "doing." The overall experience involved in this process gradually enters the child's mind as a thought process, which in turn enhances the child's cognitive development.

Both concepts (assimilation and accommodation) appear to have important links with language learning. We can often see young learners play and experiment with language, sometimes by applying knowledge they already have to a new 'object' in the language (for example, realizing that past tense involves a "-ed" sound, which many children typically over-generalize and apply to all verbs in past tense whether they are 'regular' or 'irregular',

producing such utterances as "she runned"), whereas at other times they experiment and adapt to try out a new thought on how the language works (for example, eventually coming up with "ran" and then accommodating the new knowledge into their language system). Where it gets a little confusing is in terms of Piaget's original theory being mainly applicable to physical objects in a physical environment, whereas for language learning theorists the concepts of assimilation and accommodation appear to refer to activity that is conceptually more abstract (basically, the development of learners' interlanguage through the key acts of over-generalizing or restructuring), even if the act of speaking is a real physical act and the outcome of a speaking action may yield "physical" results.

On a lighter note, it can be amusing to see just how well Piaget's assimilate/accommodate model stands up even well beyond childhood. Consider men and their general well-known lack of ability to come up with effective dating lines. I think most women would agree that in the majority of these cases they are seeing 'assimilation' more than 'accommodation' in the social skills of the men who ask them out!

Thus, it would be fair to say that the Piagetian theory of assimilation and accommodation is generally a much more welcome and popular vintage for the language-learning table compared to the theory about stages of cognitive development. Perhaps that was the particular bottle label I should have been looking for in my introduction to this article, rather than rushing down into the cellar and just grabbing any Piaget vintage willy-nilly…

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V. Piagetian Theory and Implications for Foreign Language Learning

By way of conclusion, and before we consider practical language learning implications, I think it is important to reiterate and explain five important things about Piaget as a theorist and child developmental psychologist.

For one, he originally believed that the ability to take action to solve some sort of problem presented by the environment was neither innate nor a process of imitation – the child takes the action from the outset and through the experience acquires new mental knowledge.

The second well-known characteristic of early Piagetian psychology was that first language development did not play anywhere near as much a role in children's mental growth as did the key concept of taking action and learning from it. One of Piaget's earliest works in this field, *Language and thought of the child* (1926), focused on theories of speech acts, but mainly in terms of how a child's speech reflected (rather than influenced) his or her growing mental capacity (Riley, 1996, p. 127-128).

The third consideration is that his original theories almost completely neglected any consideration for social influences on children's learning and cognitive development, and focused instead on biological factors as determining his famous "universal stages of development" theory. This also has implications for differences between his theories and those of Vygotsky ("Zone of Proximal Development") and Krashen ("i+1"). Piaget's views on cognitive development are generally held to have been centered on a single level, whereas Vygotsky's and Krashen's worked on two levels – "an actual level and a potential level" (Richard-Amato, 1996, p. 58).

Fourth, Piaget essentially saw the concepts of "learning" and "mental development" as separate from each other, that "learning utilizes development but does not shape its course" (Richard-Amato, 1996, p. 38).

Finally, something many theorists (mostly those who had found a reason to criticize him) like to conveniently overlook is the fact that Piaget's theories changed considerably over time. Whereas his early ideas are used as a direct contrast to Vygotsky's (whose work he appeared to be unaware of at the time), by the sixties in many ways the theories Piaget was expressing were remarkably similar and had begun to focus a lot more on social factors in explaining cognitive development in children.

Despite his many critics, Piaget's views on mental development in children have important implications for concepts in language learning. The first is the idea that children try to make sense of the environment they find themselves in and actively seek to manipulate ideas and concepts, creating new knowledge for themselves as they go through this process and using these experiences to negotiate new situations and problems. The second important idea is the importance of a child's environment in terms of affecting the number and type of opportunities available to apply or adapt new knowledge systems. On the first score, it needs to be acknowledged that what children have already experienced or know how to do with language is likely to have an effect on how they tackle the next 'language problem' to come their way, and that most children characteristically and instinctively want to find new solutions to new problems. In terms of the environment, something like a classroom in the middle of an EFL context affords very different (and let's face it, much more limited)

opportunities to see the need for and try out new language than a natural environment where everything around them operates in the target language they are trying to learn.

On the other hand, there is the tricky issue of those "universal stages of development" – a concept that, despite modern critics, has shown amazing tenacity in many language-teaching contexts and not always for the right reasons. For myself, teaching in a private language institute for Korean young learners five years ago, I vividly remember an incident where a Korean supervisor verbally boxed my ears in front of a room full of other teachers for daring to go ahead and help my children use past tense forms in their regular communication with me about things they'd done the day before or over the weekend. What infuriated her was the fact that "past tense" was not due to be covered on the syllabus for at least another six months, and that I was being irresponsible by "teaching them grammar that they can't understand yet." When I protested about the communicative context that had come up, she told me quite sternly to speak to them and accept answers only in the present tense, irrespective of whether it fit the situation or not, because "that's what they know how to do right now." Needless to say, her reasoning was ridiculous, and I went ahead and used and accepted past tense whenever it seemed appropriate in classroom conversation. However, I hope that example illustrates what I mean about some contexts and curriculum programmers still believing in developmental stages almost religiously.

Despite that, I actually think the concept of developmental stages can be useful, especially in planning a language program with its associated notions, topics, materials and activities – so long as an allowance is made for a sort of 'open-ended adaptability' that provides opportunities for teachers and learners to branch out and explore other aspects of language if or as they come up.

To wrap it all up, here's what I think Piaget's wine can bring to your language-learning 'dinner' for young learners:

- Remember that adults and children tend to think and perceive things differently, which is not to say that children are not capable of logical and/or abstract thinking – just because the children do not appear to understand something you say, do or perceive is not justification for assuming they are not capable of understanding it;

- Piaget's Stages of Development can tentatively serve as a model for curriculum or activity design (focusing perhaps more on 'how' something is taught rather than 'what' is taught), but use them only as a starting point and don't let them become a straight-jacket that prevents opportunities for exploring the language or methods as they arise naturally in the classroom;

- Make a learning 'environment' as rich as possible in terms of providing new things to think or talk about (posters, realia, etc) – remember that children instinctively want to find out new things and are capable of constructing new knowledge about language for themselves based on trial-and-error, but without a suitable environment this instinct becomes diminished;

- Remember what assimilation and accommodation mean and involve, including the fact that they are interrelated when it comes to children's learning – when children's overgeneralization of a language rule results in a non-target form, see it as an important first step in finding and accommodating new language, not as an 'error' that needs to be jumped on immediately for correction;

- Recall that Piaget's best known theories generally neglect social factors in learning and work from the idea of a child finding new knowledge independently – combining his theory with Vygotsky's notion of 'social scaffolding' and Bruner's notions of 'routines and formats' can create an extremely effective method for helping young learners acquire new language.

Piaget had (and continues to have) a major impact on our general understanding of the way children think and interact with and within their environment. This article has gone into depth about Piaget's best known theories and what they may imply for language learning and a foreign language classroom for young learners. Not everything Piaget had to say turns into gold for a language teacher, but there are certainly gems to be picked out of his work that can help YL language instructors get a better idea of what to bring to their classrooms, how to deliver it, and how the students themselves may grasp and interact with it.

Bon Appetit!

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Further Reading

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Riley, P. (1996). Developmental sociolinguistics and the competence/performance distinction. In

G. Brown, K. Malmkjaer & J. Williams (Eds.*), Performance and Competence in Second Language*

Acquisition (pp. 114-135). Cambridge: Cambridge University Press.

TOP

Internet Links:

Piaget - Biographical Profile: http://www.indiana.edu/%7Eintell/piaget.shtml

The Jean Piaget Society: http://www.piaget.org/

Time 100 Profile of Piaget: http://www.time.com/time/time100/scientist/profile/piaget.html

Jean Piaget and Intellectual Development: http://www.sk.com.br/sk-piage.html

Theories in Psychology – Jean Piaget:
http://www.psy.pdx.edu/PsiCafe/KeyTheorists/Piaget.htm

(this site has a great selection of links to sites with information about Piaget's life, theories, and application of his theories).

TOP

How to refer to this article:

If you intend to use this article for some kind of research, please use standard APA referencing format to refer to it. An example follows:

Renshaw, J.D. (2004, September). [Theories About Young Learners and Language Learning - Part 1]

Vintage Piaget - A fine old drop that gets better with time. *English Raven Online Journal for*

Language Teachers, Volume 1 (2004/2005): Article 1. Retrieved [enter date you referred to this]

from http://www.englishraven.com/article_theory_piaget.html

TOP

Jean Piaget was one of the first developmental psychologists to examine how children think and reason. He asked whether children perceive and make sense of the world the way adults do. and created a theory that explores how children's thought processes change with development.

Piaget argued that children's thought processes progress through several distinct, predictable stages. At each stage, the way in which we look at the world changes. We progress through each in order, with no skipping or regression under normal circumstances.

First Stage: Sensorimotor Reasoning

During the sensorimotor stage, from birth to around 18-24 months, infants are not yet able to use symbols or images to represent objects in the external world. To think about an object they must act on it with their senses and motor abilities. The major advance of this stage is object permanence, the understanding that objects continue to exist outside of sensory awareness.

If an infant reaches for a toy and you cover it with a cloth, he or she will stop reaching and look at something else. If you secretly remove the toy and then lift the cloth, the baby will look at the empty spot without surprise or disappointment. According to Piaget, the baby does not yet have object permanence; out of sight is out of mind. By a year of age, children develop object permanence and can use mental representation and think about objects that are not physically present.

Second Stage: Preoperational Reasoning

From 2 to about 7, the child is in the preoperational stage of development. Now they can use mental representation to think. They begin to use pretend play. Children are now capable of symbolic representation - using a symbol to represent an object. Because of this, children learn language, a system of symbols.

Piaget emphasized that during this period, children's abilities are limited. One pervasive limitation of children's reasoning during the preoperational period is egocentrism, the inability to take the perspective of another person. A child may assume that everyone has the same knowledge, experiences, and perspective that he or she has.

Third Stage: Concrete Operational Reasoning

The concrete operational stage lasts from about age 7 to 11. Now children can engage in mental representation and think logically about the world around them. Specifically, children are able to manipulate their mental representations to think and solve problems. Thought becomes logical, overcoming the limitations of the preoperational stage of reasoning. Now children are capable of understanding conservation, that a change in the size of shape of a substance (like clay) does not change its mass.

Go To Page: 1 2

2008–09 ನೇ ಸಾಲಿನ ಎಸ್.ಡಿ.ಎಂ.ಸಿ. ಮತ್ತು ಸಿ.ಎ.ಸಿ ಜಿಲ್ಲಾ ಮಟ್ಟದ

ಶೈಕ್ಷಣಿಕ ಸಮಾಲೋಚನಾ ಕಾರ್ಯಾಗಾರ

ಬೆಳಗ್ಗೆ 10.00 ರಿಂದ ಸಂಜೆ 5.30 ರ ವರೆಗೆ

(ತಾಲೂಕ :)

ಸ್ಥಳ : ಡಯಟ್ ಆವರಣ

ಹಾಜರಾತಿ ವಹಿ

ಜಿಲ್ಲಾ ಶಿಕ್ಷಣ ಮತ್ತು ತರಬೇತಿ ಸಂಸ್ಥೆ, ಧಾರವಾಡ

2008–09 ನೇ ಸಾಲಿನ ಎಸ್.ಡಿ.ಎಂ.ಸಿ. ಮತ್ತು ಸಿ.ಎ.ಸಿ ಜಿಲ್ಲಾ ಮಟ್ಟದ ಶೈಕ್ಷಣಿಕ ಸಮಾಲೋಚನಾ ಕಾರ್ಯಾಗಾರ

ಹಾಜರಾತಿ ವಹಿ

ಜಿಲ್ಲೆ : ಧಾರವಾಡ **ತಾಲೂಕ :**

ಕ್ರ.ಸಂ.	ಹೆಸರು ಮತ್ತು ವಿಳಾಸ	ವಿತರಿಸಿದ ವಸ್ತುಗಳು			ಹಾಜರಾತಿ	
		ಪೆನ್ನು	ನೋ.ಪು	ಸಾಹಿತಿ		

ಜಿಲ್ಲಾ ಶಿಕ್ಷಣ ಮತ್ತು ತರಬೇತಿ ಸಂಸ್ಥೆ, ಧಾರವಾಡ

2008–09 ನೇ ಸಾಲಿನ ಎಸ್.ಡಿ.ಎಂ.ಸಿ. ಮತ್ತು ಸಿ.ಎ.ಸಿ ಜಿಲ್ಲಾ ಮಟ್ಟದ ಶೈಕ್ಷಣಿಕ ಸಮಾಲೋಚನಾ ಕಾರ್ಯಾಗಾರ

ಹಾಜರಾತಿ ವಹಿ

ಸಂಪನ್ಮೂಲ ವ್ಯಕ್ತಿಗಳು

ಕ್ರ.ಸಂ.	ಹೆಸರು ಮತ್ತು ವಿಳಾಸ	ವಿತರಿಸಿದ ವಸ್ತುಗಳು			ಹಾಜರಾತಿ	
		ಪೆನ್ನು	ನೋ.ಪು	ಸಾಹಿತಿ		

ಜಿಲ್ಲಾ ಶಿಕ್ಷಣ ಮತ್ತು ತರಬೇತಿ ಸಂಸ್ಥೆ, ಧಾರವಾಡ

2008–09 ನೇ ಸಾಲಿನ ಎಸ್.ಡಿ.ಎಂ.ಸಿ. ಮತ್ತು ಸಿ.ಎ.ಸಿ ಜಿಲ್ಲಾ ಮಟ್ಟದ ಶೈಕ್ಷಣಿಕ ಸಮಾಲೋಚನಾ ಕಾರ್ಯಾಗಾರ

ಪ್ರಯಾಣ ಭತ್ಯೆ/ದಿನಭತ್ಯೆ ಬಟವಡೆ ಮಾಡಿದ ವಿವರ

ಬಟವಡೆ ವಹಿ

ಜಿಲ್ಲೆ : ಧಾರವಾಡ **ತಾಲೂಕ :**

ಕ್ರ.ಸಂ	ಹೆಸರು ಮತ್ತು ವಿಳಾಸ	ವಿವರಗಳು			
		ಪ್ರಯಾಣ ಭತ್ಯೆ	ದಿನಭತ್ಯೆ	ಒಟ್ಟು	ಸಹಿ

	ಒಟ್ಟು				

ಜಿಲ್ಲಾ ಶಿಕ್ಷಣ ಮತ್ತು ತರಬೇತಿ ಸಂಸ್ಥೆ, ಧಾರವಾಡ

2008–09 ನೇ ಸಾಲಿನ ಎಸ್.ಡಿ.ಎಂ.ಸಿ. ಮತ್ತು ಸಿ.ಎ.ಸಿ ಜಿಲ್ಲಾ ಮಟ್ಟದ ಶೈಕ್ಷಣಿಕ ಸಮಾಲೋಚನಾ ಕಾರ್ಯಾಗಾರ

ಬಟವಡೆ ವಹಿ

ಸಂಪನ್ಮೂಲ ವ್ಯಕ್ತಿಗಳು

ಕ್ರ.ಸಂ	ಹೆಸರು ಮತ್ತು ವಿಳಾಸ	ವಿವರಗಳು				
		ಗೌರವಧನ	ಪ್ರಯಾಣ ಭತ್ಯೆ	ದಿನಭತ್ಯೆ	ಒಟ್ಟು	ಸಹಿ

ಜಿಲ್ಲಾ ಶಿಕ್ಷಣ ಮತ್ತು ತರಬೇತಿ ಸಂಸ್ಥೆ, ಧಾರವಾಡ

ದಿನಾಂಕ : _____

ಹಾಜರಾತಿ ಪತ್ರ

ಶ್ರೀ/ಶ್ರೀಮತಿ_____ದಿನಾಂಕ _____ ರಿಂದ _____ರ ವರೆಗೆ **2008–09** ನೇ ಸಾಲಿನ ಎಸ್.ಡಿ.ಎಂ.ಸಿ. ಮತ್ತು ಸಿ.ಎ.ಸಿ ವಿಭಾಗ ಮಟ್ಟದ ಶೈಕ್ಷಣಿಕ ಸಮಾಲೋಚನಾ ಕಾರ್ಯಾಗಾರ ತರಬೇತಿಗೆ ಹಾಜರಾಗಿರುತ್ತಾರೆ. ದಿನಾಂಕ _____ ರಂದು ತರಬೇತಿಯ ಅವಧಿಯ ನಂತರ ಸದರಿಯವರನ್ನು ಬಿಡುಗಡೆ ಮಾಡಿದೆ ನಿಯಮಾನುಸಾರ ಪ್ರಯಾಣ ಭತ್ಯೆ/ದಿನಭತ್ಯೆ ನೀಡಿರುತ್ತದೆ.

ಪ್ರಾಚಾರ್ಯರು

ಜಿಲ್ಲಾ ಶಿಕ್ಷಣ ಮತ್ತು ತರಬೇತಿ ಸಂಸ್ಥೆ,

ಧಾರವಾಡ

ಜಿಲ್ಲಾ ಶಿಕ್ಷಣ ಮತ್ತು ತರಬೇತಿ ಸಂಸ್ಥೆ, ಧಾರವಾಡ

ದಿನಾಂಕ : _____

ಹಾಜರಾತಿ ಪತ್ರ

ಶ್ರೀ/ಶ್ರೀಮತಿ_____ದಿನಾಂಕ _____ ರಿಂದ _____ ರ ವರೆಗೆ **2008–09** ನೇ ಸಾಲಿನ ಎಸ್.ಡಿ.ಎಂ.ಸಿ. ಮತ್ತು ಸಿ.ಎ.ಸಿ ವಿಭಾಗ ಮಟ್ಟದ ಶೈಕ್ಷಣಿಕ ಸಮಾಲೋಚನಾ ಕಾರ್ಯಾಗಾರ ತರಬೇತಿಗೆ ಹಾಜರಾಗಿರುತ್ತಾರೆ. ದಿನಾಂಕ _____ ರಂದು ತರಬೇತಿಯ ಅವಧಿಯ ನಂತರ ಸದರಿಯವರನ್ನು ಬಿಡುಗಡೆ ಮಾಡಿದೆ ನಿಯಮಾನುಸಾರ ಪ್ರಯಾಣ ಭತ್ಯೆ/ದಿನಭತ್ಯೆ ನೀಡಿರುತ್ತದೆ.

ಪ್ರಾಚಾರ್ಯರು

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ಧಾರವಾಡ

ಜಿಲ್ಲಾ ಶಿಕ್ಷಣ ಮತ್ತು ತರಬೇತಿ ಸಂಸ್ಥೆ, ಧಾರವಾಡ

ದಿನಾಂಕ : _____

ಹಾಜರಾತಿ ಪತ್ರ

ಶ್ರೀ/ಶ್ರೀಮತಿ_____ದಿನಾಂಕ _____ ರಿಂದ _____ರ ವರೆಗೆ **2008–09** ನೇ ಸಾಲಿನ ಎಸ್.ಡಿ.ಎಂ.ಸಿ. ಮತ್ತು ಸಿ.ಎ.ಸಿ ವಿಭಾಗ ಮಟ್ಟದ ಶೈಕ್ಷಣಿಕ ಸಮಾಲೋಚನಾ ಕಾರ್ಯಾಗಾರ ತರಬೇತಿಗೆ ಹಾಜರಾಗಿರುತ್ತಾರೆ. ದಿನಾಂಕ _____ ರಂದು ತರಬೇತಿಯ ಅವಧಿಯ ನಂತರ ಸದರಿಯವರನ್ನು ಬಿಡುಗಡೆ ಮಾಡಿದೆ ನಿಯಮಾನುಸಾರ ಪ್ರಯಾಣ ಭತ್ಯೆ/ದಿನಭತ್ಯೆ ನೀಡಿರುತ್ತದೆ.

ಪ್ರಾಚಾರ್ಯರು

ಜಿಲ್ಲಾ ಶಿಕ್ಷಣ ಮತ್ತು ತರಬೇತಿ ಸಂಸ್ಥೆ,

ಧಾರವಾಡ

ಜಿಲ್ಲಾ ಶಿಕ್ಷಣ ಮತ್ತು ತರಬೇತಿ ಸಂಸ್ಥೆ, ಧಾರವಾಡ

ದಿನಾಂಕ : _____

~~ಹಾಜರಾತಿ ಪತ್ರ~~

ಶ್ರೀ/ಶ್ರೀಮತಿ_____ದಿನಾಂಕ _____ ರಿಂದ _____ ರ ವರೆಗೆ **2008–09** ನೇ ಸಾಲಿನ ಎಸ್.ಡಿ.ಎಂ.ಸಿ. ಮತ್ತು ಸಿ.ಎ.ಸಿ ವಿಭಾಗ ಮಟ್ಟದ ಶೈಕ್ಷಣಿಕ ಸಮಾಲೋಚನಾ ಕಾರ್ಯಾಗಾರ ತರಬೇತಿಗೆ ಹಾಜರಾಗಿರುತ್ತಾರೆ. ದಿನಾಂಕ _____ ರಂದು ತರಬೇತಿಯ ಅವಧಿಯ ನಂತರ ಸದರಿಯವರನ್ನು ಬಿಡುಗಡೆ ಮಾಡಿದೆ ನಿಯಮಾನುಸಾರ ಪ್ರಯಾಣ ಭತ್ಯೆ/ದಿನಭತ್ಯೆ ನೀಡಿರುತ್ತದೆ.

ಪ್ರಾಚಾರ್ಯರು

ಜಿಲ್ಲಾ ಶಿಕ್ಷಣ ಮತ್ತು ತರಬೇತಿ ಸಂಸ್ಥೆ,

ಧಾರವಾಡ

ಇಂದ : ಶ್ರೀ

ಜಿಲ್ಲಾ ಶಿಕ್ಷಣ ಮತ್ತು ತರಬೇತಿ ಸಂಸ್ಥೆ,

ಧಾರವಾಡ.

ದಿನಾಂಕ : 22/09/2008.

ಗೆ,

ಮಾನ್ಯ ಪ್ರಾಚಾರ್ಯರು, ಡಯಟ್ ಹಾಗೂ

ಪದನಿಮಿತ್ತ ಉಪನಿರ್ದೇಶಕರು (ಅಭಿವೃದ್ಧಿ)

ಸಾರ್ವಜನಿಕ ಶಿಕ್ಷಣ ಇಲಾಖೆ, ಧಾರವಾಡ.

ಮಾನ್ಯರೇ,

ವಿಷಯ : 2008–2009ನೇ ಸಾಲಿನ ಎಸ್.ಡಿ.ಎಂ.ಸಿ & ಸಿ.ಎ.ಸಿ. ವಿಭಾಗ ಮಟ್ಟದ ಕಾರ್ಯಾಗಾರಕ್ಕೆ ತಗಲುವ ವೆಚ್ಚ ಭರಿಸುವ ಸಲುವಾಗಿ ಬೇಡಿಕೆ ಪಟ್ಟಿ ಸಲ್ಲಿಸುವ ಬಗ್ಗೆ.

ಉಲ್ಲೇಖ : ಮಾನ್ಯ ರಾಜ್ಯ ಯೋಜನಾ ನಿರ್ದೇಶಕರು, ಬೆಂಗಳೂರು., ಇವರ ಪತ್ರ ಸಂಖ್ಯೆ : ಸ.ಶಿ.ಅ./ಸಜಾ/ಎಸ್.ಡಿ.ಎಂ.ಸಿ ಮತ್ತು ಸಿ.ಎ.ಸಿ./ಕಾ/ ವಿ.ಹಂತ/ 2008–2009., ದಿನಾಂಕ : 08–09–2008.

ಮೇಲ್ಕಾಣಿಸಿದ ವಿಷಯ ಹಾಗೂ ಉಲ್ಲೇಖಕ್ಕೆ ಸಂಬಂಧಿಸಿದಂತೆ, 2008–2009 ನೇ ಸಾಲಿನ ಎಸ್.ಡಿ.ಎಂ.ಸಿ & ಸಿ.ಎ.ಸಿ. ಸದಸ್ಯರುಗಳಿಗೆ ತರಬೇತಿ ನೀಡುವ ಸಂಬಂಧ, ಜಿಲ್ಲಾ ಮಟ್ಟದಲ್ಲಿ ಸಂಪನ್ಮೂಲ ವ್ಯೆಕ್ತಿಗಳಿಗೆ ದಿನಾಂಕ 22–09–2008 ಮತ್ತು 23–09–2008 ವರೆಗೆ ಎರಡು ದಿನಗಳ ಕಾಲ ಕಾರ್ಯಾಗಾರವನ್ನು ನಡೆಸುತ್ತಿದ್ದು, ಅದಕ್ಕೆ **ಧಾರವಾಡ ತಾಲೂಕ** ತಲಾ 30 ಜನರು ಮತ್ತು 08 ಸಂಪನ್ಮೂಲ ವ್ಯೆಕ್ತಿಗಳು ಭಗವಹಿಸುತ್ತಾರೆ. ಇದು ಸನಿವಾಸ ತರಬೇತಿ ಯಾಗಿದ್ದು, ಬಂದಂತ ಸಿಬಿರಾರ್ಥಿಗಳು ಮತ್ತು ಸಂಪನ್ಮೂಲ ವ್ಯೆಕ್ತಿಗಳಿಗೆ ಚಹಾ/ಕಾಫೀ, ಪ್ರಯಾಣ ಭತ್ತೆ & ದಿನ ಭತ್ತೆ, ಗೌರವಧನ, ಲೇಖನ ಸಾಮಗ್ರಿ

ಇತ್ಯಾದಿಗಳಿಗೆ ಈ ಕೆಳಕಂಡಂತೆ ವೆಚ್ಚ ಆಗಲಿದ್ದು ಮುಂಗಡವಾಗಿ ಹಣ ಬಿಡುಗಡೆ ಮಾಡಲು ವಿನಂತಿಸಿದೆ. ತರಬೇತಿ ಮುಗಿದ ನಂತರ ಖರ್ಚಿನ ವಿವರ ಸಲ್ಲಿಸಲಾಗುವುದು.

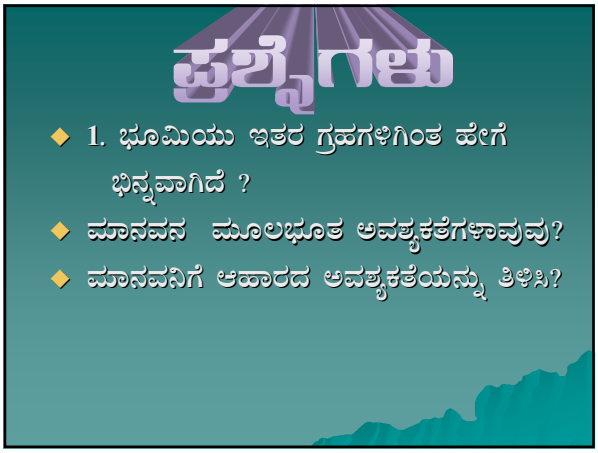
ಕ್ರ. ಸಂಖ್ಯೆ	ವಿವರ	ಮೊತ್ತ
01	ಶಿಬಿರಾರ್ಥಿಗಳ ಪ್ರಯಾಣ ಭತ್ತೆ (ವಾಸ್ತವ ದರ)	
02	ಶಿಬಿರಾರ್ಥಿಗಳ ದಿನ ಭತ್ತೆ	
03	ಸಂಪನ್ಮೂಲ ವ್ಯೆಕ್ತಿಗಳ ಪ್ರಯಾಣ ಭತ್ತೆ (ವಾಸ್ತವ ದರ)	
04	ಸಂಪನ್ಮೂಲ ವ್ಯೆಕ್ತಿಗಳ ದಿನ ಭತ್ತೆ	
05	ಎನ್.ಜಿ.ಓ. ಗಳ ಗೌರವ ಧನ	
06	ಚಹಾ/ಕಾಫೀ	
07	ಲೇಖನ ಸಾಮಗ್ರಿ	
08	ಝರಾಕ್ಸ ಇತ್ಯಾದಿ	
	ಒಟ್ಟು	

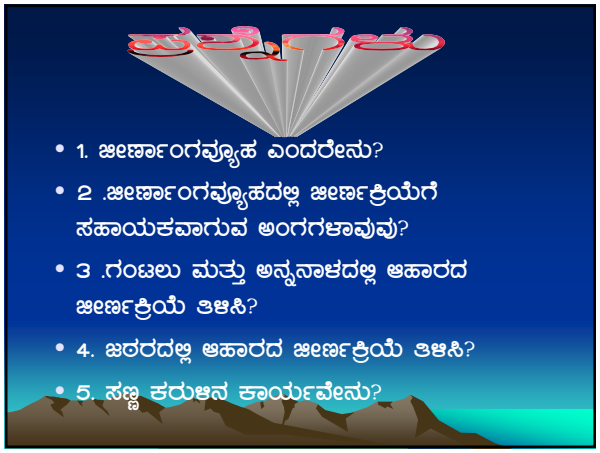

ಸುಸ್ವಾಗತಂ


ಚಿನ್ನಿ ತಾಂತ್ರಿಕ ಆಧಾರಿತ ಪಾಠ
ಯೋಜನೆ ನೊಡೊಣ


ಚಿನ್ನಿ ತಾಂತ್ರಿಕ ಆಧಾರಿತ ಪಾಠ ಯೋಜನೆ
ನೊಡೋಣ


ತಾಂತ್ರಿಕ ಆಧಾರಿತ ಪಾಠ ಯೋಜನೆ
ಪ್ರಸ್ತುತಪಡಿಸಿದವರು
ಡಾ|| ಶೋಭಾ ನಾಯ್ಕರ


ಪ್ರಶ್ನೆಗಳು
1. ಭೂಮಿಯು ಇತರ ಗ್ರಹಗಳಿಗಿಂತ ಹೇಗೆ ಭಿನ್ನವಾಗಿದೆ ?
ಮಾನವನ ಮೂಲಭೂತ ಅವಶ್ಯಕತೆಗಳಾವುವು?
ಮಾನವನಿಗೆ ಆಹಾರದ ಅವಶ್ಯಕತೆಯನ್ನು ತಿಳಿಸಿ?


ಪ್ರಶ್ನೆಗಳು
1. ಜೀರ್ಣಾಂಗವ್ಯೂಹ ಎಂದರೇನು?
2 .ಜೀರ್ಣಾಂಗವ್ಯೂಹದಲ್ಲಿ ಜೀರ್ಣಕ್ರಿಯೆಗೆ ಸಹಾಯಕವಾಗುವ ಅಂಗಗಳಾವುವು?
3 .ಗಂಟಲು ಮತ್ತು ಅನ್ನನಾಳದಲ್ಲಿ ಆಹಾರದ ಜೀರ್ಣಕ್ರಿಯೆ ತಿಳಿಸಿ?
4. ಜಠರದಲ್ಲಿ ಆಹಾರದ ಜೀರ್ಣಕ್ರಿಯೆ ತಿಳಿಸಿ?
5. ಸಣ್ಣ ಕರುಳಿನ ಕಾರ್ಯವೇನು?

ಮಾನವನಲ್ಲಿ ಜೀರ್ಣಕ್ರಿಯೆ

- ಮಾನವನು ಸಸ್ಯಮೂಲ ಮತ್ತು ಪ್ರಾಣಿ ಮೂಲ ಆಹಾರಗಳೆರಡನ್ನು ಸೇವಿಸುವದರಿಂದ ಅವನನ್ನು ಮಿಶ್ರಾಹಾರಿ ಎನ್ನುವರು. ಉನ್ನತ ಪ್ರಾಣಿಗಳ ವರ್ಗಕ್ಕೆ ಸೇರಿದ ಮಾನವನಲ್ಲಿ ಪೋಷಣೆಯ ಹಂತಗಳಾದ ಸೇವನೆ, ಜೀರ್ಣಕ್ರಿಯೆ, ಹೀರಿಕೆ, ಸ್ವಾಂಗೀಕರಣ, ವಿಸರ್ಜನೆ ಒಳಗೊಂಡಿರುತ್ತದೆ. ಸೇವಿಸಿದ ಆಹಾರವು ಉತ್ತಮವಾಗಿ ವಿಕಾಸಗೊಂಡಿರುವ ಜೀರ್ಣನಾಳದ ಮೂಲಕ ಸಾಗಿಸಲ್ಪಟ್ಟು ಜೀರ್ಣವಾಗುತ್ತದೆ.
- ಮಾನವನಲ್ಲಿ ಜೀರ್ಣಕ್ರಿಯೆಯು ಎರಡು ಹಂತಗಳಲ್ಲಿ ನಡೆಯುತ್ತದೆ.
- ಯಾಂತ್ರಿಕ ಜೀರ್ಣಕ್ರಿಯೆ : ಆಹಾರದ ದೊಡ್ಡ ಕಣಗಳು ನಾಲಗೆ, ಹಲ್ಲು ,ಮತ್ತು ಜಠರದ ಬಲಿಷ್ಠ ಸ್ನಾಯುಗ ರಾ ಲಳಿಂದ ಮುದ್ದೆಯಂತೆ ಪರಿವರ್ತಿಸಲ್ಪಡುವದು.
- ರಾಸಾಯನಿಕ ಜೀರ್ಣಕ್ರಿಯೆ : ಆಹಾರವ ಕಿಣ್ವಗಳ ಕ್ರಿಯೆಯಿಂದ ಜಲವಿಶ್ಲೇಷಣೆ ಹೊಂದಿ ಅತ್ಯಂತ ಚಿಕ್ಕ ಚಿಕ್ಕ ಕಣಗಳಾಗುವದು.

ಮಾನವನ ಜೀರ್ಣಾಂಗವ್ಯೂಹ

ಮಾನವನಜೀರ್ಣಾಂಗವ್ಯೂಹವು ಜೀರ್ಣನಾಳ ಮತ್ತು ಜೀರ್ಣಗ್ರಂಥಿಗಳನ್ನು ಒಳಗೊಂದಡಿದೆ.

ಮಾನವನ ಜೀರ್ಣನಾಳವು ಬಾಯಿಯಿಂದ ಗುದದ್ವಾರದವರೆಗೂ ವಿಸ್ತರಿಸಿದ್ದು ಗಂಟಲು ಅನ್ನನಾಳ ಜಠರ ಸಣ್ಣಕರಳು ಮತ್ತು ದೊಡ್ಡಕರಳುಗಳನೊಳಗೊಂಡಿದೆ. ಬಾಯಿಯು ಬಾಯಿಯ ಕುಹರಕ್ಕೆ ತೆರೆಯುತ್ತದೆ. ಇದರಲ್ಲಿ ಹಲ್ಲುಗಳು ನಾಲಗೆ ಮತ್ತು ಮೂರು ಜೊತೆ ಲಾಲಾರಸ ಗ್ರಂಥಿಗಳಿವೆ. ಮಾನವನಲ್ಲಿ ಹಲ್ಲುಗಳು ದವಡೆಯ ಮೂಳೆಗಳಲ್ಲಿ ಹುದುಗಿದೆ.

ಬಾಯಿ: ಬಾಯಿಯ ಮೆಲ್ದವಡೆ ಮತ್ತು ಕೆಳದವಡೆಗಳಲ್ಲಿ ಹಲ್ಲುಗಳಿದ್ದು ಆಹಾರವನ್ನು ಅಗಿಯುವುದಕ್ಕೆ ನೆರವಾಗುತ್ತದೆ.

೧. ಹಲ್ಲಿನ ರಚನೆ

- ಹಲ್ಲು ಡೆಂಟಿನ್ ಎಂಬ ಅತಿ ಗಟ್ಟಿಯಾದ ವಸ್ತುವಿನಿಂದ ಆಗಿದೆ. ಹಲ್ಲಿನ ಮೂರು ಮುಖ್ಯ ಭಾಗಗಳು ಶಿರೋಭಾಗ ಕಂಠಭಾಗ ಬೇರು ಹಲ್ಲಿನ ಮಧ್ಯಭಾಗದಲ್ಲಿ ಮಜಾ ಕುಹರವಿದೆ. ಇದರಲ್ಲಿ ರಕ್ತನಾಳಗಳು ಮತ್ತು ನರಗಳು ಇವೆ. ವಸಡಿನ ಮೆಲ್ಭಾಗದ ಹೆನರಕಾಣಿಸುವ ಹಲ್ಲಿನ ಭಾಗವನ್ನು ಡೆಂಟಿನಗಿಂತಲೂ ಗಟ್ಟಿಯಾದ ಎನಾಮಲ್ ಎಂಬ ವಸ್ತು ಆವರಿಸಿದೆ. ಬಾಯಿಯಲ್ಲಿ ಹಾಕಿಕೊಂಡ ಆಹಾರವನ್ನು ಹಲ್ಲುಗಳು ಕಡಿದು ಕತ್ತರಿಸಿ ಅಗಿಯುವ ಕಾರ್ಯ ಮಾಡುತದೆ . ನಾಲಗೆ ಈ ಕಾರ್ಯಕ್ಕೆ ಸಹಕರಿಸುತ್ತದೆ. ಹಾಗೂ ಇದರ ಮೇಲೆ ರುಚಿಗ್ರಹಿಸುವ ರಸಾಂತರುಗಳಿವೆ. ಬಾಯಿಯ ಕುಹರದಲ್ಲಿ ಮೂರು ಜೊತೆ ಲಾಲಾಗ್ರಂಥಿಗಳದ್ದು ಲಾಲಾರಸವನ್ನು ಸ್ರವಿಸುತ್ತದೆ.
- ಇದರಲ್ಲಿ ಲೋ ಅಮೈಲೇಜ್ ಇದು ಪಿಷ್ಟವನ್ನು ಮಾಲ್ಟೋಸ್ ಆಗಿಪರಿವರ್ತನೆ ಮಾಡುತ್ತದೆ. ನಂತರ ಆಹಾರ ಅನ್ನನಾಳಕ್ಕೆ ಬರುತತ್ತದೆ.

2.ಗಂಟಲು ಮತ್ತು ಅನ್ನನಾಳ

- _ಗಂಟಲು, ಗಾಳಿ ಮತ್ತು ಆಹಾರ ಹಾದು ಹೋಗಲು ಇರುವ ಸಾಮಾನ್ಯಮಾರ್ಗ ಇದು ಅನ್ನನಾಳ ತೆರೆಯತ್ತದೆ. ಶ್ವಾಸನಾಳ ದ ಮೊದಲನೆಯ ಭಾಗವಾದ ಧ್ವನಿ ಪೆಟ್ಟಿಗೆ ಅನ್ನನಾಳದ ಮುಂಭಾಗದಲ್ಲಿದ್ದು ಬೋಲಸ ಅನ್ನು ನುಂಗುವಾಗ ಎಪಿಗ್ಲಾಟಿಸ್ ಎಂಬ ಸಂಯೋಜಕ ಅಂಗಾಂಶದ ಮುಚ್ಚಳದಿಂದ ತಾತ್ಕಾಲಿಕವಾಗಿ ಧ್ವನಿ ಪೆಟ್ಟಿಗೆಯು ಮುಚ್ಚಲ್ಪಟ್ಟು ಆವರಿಸಿ ಬೋಲಸವಾಗಿ ಶ್ವಾಸನಾಳವನ್ನು ಪ್ರವೇಶಿಸುವದನ್ನು ತದೆಯುತ್ತದೆ. ಹೀಗೆ ಬೋಲಸ್ ಅನ್ನನಾಳವನ್ನು ಮಾತ್ರ ಪ್ರವೇಶಿಸುತ್ತದೆ.
- ಅನ್ನನಾಳವು ಒಂದು ಸ್ನಾಯುಕ ನಾಳ. ಇದು ಗಂಟಲನ್ನು ಜಠರದೊಳಗೆ ಸೇರಿಸುತ್ತದೆ. ಅನ್ನನಾಳದ ಗೋಡೆಯಲ್ಲಿರುವ ಎರಡು ಪದರದ ಸ್ನಾಯುಗಳ ಸಂಕೋಚನೆ ಮತ್ತು ವಿಕಸನಗಳಿಂದ ಉಂಟಾದ ಜಲನೆಗಳು ಬೋಲಸ್ ಅನ್ನು ಜಠರಕ್ಕೆ ತಳ್ಳುತ್ತದೆ. ಈಜಲನೆಯನ್ನು ಕಂಪನ ಎಂದುಕರೆಯುತ್ತಾರೆ

ಈ ಜಲನೆ ಜೀರ್ಣನಾಳದ ಉದ್ದಕ್ಕೂ ಕಂಡುಬರುತ್ತದೆ.

೩.ಜಠರ

- ಜಠರವು ಜೀಲದಂತಿರುವ ಸ್ನಾಯುಕ ಅಂಗ. ಇದರ ಗೋಡೆಯಲ್ಲಿರುವ ಮೂರು ಪದರದ ಸ್ನಾಯುಗಳು ವಿವಿಧ ದಿಕ್ಕುಗಳಲ್ಲಿ ಸಂಕೋಚನ ವಿಕಸನಗಳನ್ನು ಹೊಂದಿ ಆಹಾರವನ್ನು ಯಾಂತ್ರಿಕವಾಗಿ ಪಲಿಸುತ್ತದೆ. ಇದರಿಂದ ಆಹಾರವು
- ಯಾಂತ್ರಿಕವಾಗಿ ವಿಭಜಿಸಲ್ಪಟ್ಟು ಜಠರದ ಗೋಡೆಯಲ್ಲಿರುವ ಜಠರರಸ ಗ್ರಂಥಿಗಳು ಸ್ರವಿಸುವ ಜಠರ ರಸದೊಡನೆ ಸೇರುತ್ತದೆ.
- 1. ಪೆಪ್ಸಿನ್: ಆಹಾರದಲ್ಲಿರುವ ಪ್ರೋಟೀನನ್ನು ಪೆಪ್ಟೈಡುಗಳಾಗಿ ಪರಿವರ್ತಿಸುತ್ತದೆ.
- 2. ರೆನ್ನಿನ್: ಹಾಲಿನ ಕರಗುವ ಪ್ರೋಟೀನ್‌ಗಳನ್ನು ಕರಗದ ಪೊಸರನ್ನಾಗಿ ಪರಿವರ್ತಿಸುತ್ತದೆ.
- ಜಠರದ ರಸದಲ್ಲಿ ಹೈಡ್ರೋಕಲೋರಿಕ್ ಆಮ್ಲವು ಅಹ ಇದ್ದು ಆಹಾರದೊಡನೆ ಜಠರವನ್ನು ಪ್ರವೇಶಿಸಬಹುದಾದ ಸೂಕ ಜು ಜೀವಿಗಳನ್ನು ನಾಶಪಡಿಸುತ್ತದೆ.
- ಆಹಾರವು ಈಗ ಕದೆಯಲ್ಪಟ್ಟು ಕೈಮ್ ಎಂಬ ಗಟ್ಟ ಗಂಜಿರೂಪಕ್ಕೆ ಬಂದಿರುತ್ತದೆ. ಇದು ಜಠರದಿಂದ ಸಣ್ಣ ಕರುಳಿನ ಮೊದಲನೆಯ ಭಾಗವಾದ ಡಿಯೋಡಿನಮ್ ಅನ್ನು ಪ್ರವೇಶಿಸುತ್ತದೆ.

4.ಸಣ್ಣ ಕರುಳು

- ಸಣ್ಣ ಕರಳು ವಯಸ್ಕರಲ್ಲಿ ಸುಮಾರು ಐದು ಮೀಟರ್ ಉದ್ದದ ಸುರುಳಿಯಂತಿರುತ್ತದೆ.
- ಮೇದೋಜೀರಕ ಗ್ರಂಥಿಯಿಂದ ಮೇದೋಜೀರಕ ರಸ, ಯಕೃತ್ತಿನಿಂದ ಪಿತ್ತರಸ, ಹಾಗೂ ಕರುಳು ಗ್ರಂಥಿಗಳಿಂದ ಹರಿಯುವ ಕರುಳು ರಸಗಳು ಜಠರದಿಂದ ಬಂದ ಆಹರ ಪದಾರ್ಥವನ್ನು ಜೀರ್ಣಿಸಲು ನೆರವಾಗುವುದು. ಕಿಣ್ವಗಳೇ ಇಲ್ಲದ
- ಪಿತ್ತರಸ ಕೊಬ್ಬಿನ ದೊಡ್ಡ ಹನಿಗಳನ್ನು ಸಣ್ಣಹನಿಗಳಾಗಿ ಮಾರ್ಪಡಿಸಿದರೆ ಉಳಿದೆರಡು ರಸಗಳಲ್ಲಿರುವ ಕಿಣ್ವಗಳನ್ನು ಜೀರ್ಣಿಸುವುದು ಹೀಗೆ ಜೀರ್ಣವದ ಆಹಾರವು ಸಣ್ಣಕರುಳಿನ ಒಳಗೋಡೆಯ ಮೇಲ್ಮೈಯಲ್ಲಿರುವ ಎಳೆಗಳಿಂದ ಹೀರಲ್ಪಟ್ಟು ರಕ್ತಗತವಾಗುತ್ತದೆ

5.ದೊಡ್ಡ ಕರುಳು

- ದೊಡ್ಡ ಕರುಳಿನ ಗೋಡೆ ಕೈಮ್ನಲ್ಲಿಂದ ಹೆಚ್ಚಾದ ನೀರು ಲವಣಗಳನ್ನು ಹೀರಿಕೊಳ್ಳುತ್ತದೆ. ಜೀರ್ಣವಗದ ಆಹರ ಅಂದರೆ ಮಲ ಗುದದ್ವಾರದ ಮೂಲಕ ಹೊರ ಹಾಕಲ್ಪದುತ್ತದೆ. ಸಣ್ಣಕರುಳಿನಿಂದ ಕೈಮ್ ಆಹಾರದ ಹೀರಿಕೆಯನಂತರ ಜೀರ್ಣವಾಗದ ಆಹರವು ದೊಡ್ಡ ಕರುಳನ್ನು ಪ್ರವೆಶಸುತ್ತದೆ. ಸಣ್ಣ ಕರುಳು, ದೊಡ್ಡಕರುಳನ್ನುಪ್ರವೇಶಿಸುವ ಪ್ರದೇಶ ದೊಡ್ಡಜಿಲದಂತಿರುತ್ತದೆ. ಇದನ್ನು ಸಿಕಮ್ ಎಂದು ಕರೆಯುತ್ತರೆ. ಸಣ್ಣ ಕರುಳು ದೊಡ್ಡ ಕರುಳನ್ನು ಸೆರುವ ಜಾಗದಲ್ಲಿ ಬೆರಳಿನಂತಹ ರಚನೆ ಇದೆ ಇದನ್ನು ಅಪೆಂಡಿಕ್ಸೆ ಎಮದು ಕರೆಯುತ್ತಾರೆ. ಇದಕ್ಕೆಸೇಂಕು ತಗಅದಾಗ ಉರಿತ ಉಂಡಗುತ್ತದೆ. ಇದರಿಂದ ಅಪೆಂಡಿಕ್ಸ್ ಎಂಬ ರೋಗ ಉಂಡಾಗುತ್ತದೆ.

6.ಗುದದ್ವಾರ

- ಜೀರ್ಣವಾದಗವ್ಯಾಹದ ಉತ್ಪಾದಿತ ಕಡೆಯ ಬಿದಗ ದೇಹಕ್ಕೆ ಬೇಡವಾದ ವಿಸಾರ ಪದಾರ್ಥಗಳನ್ನು ಗುದದ್ವಾರವು ದೇಹದಿಂದ ಹೊರ ಹಾಕುತ್ತದೆ.

THE END

GOOD BY

THANK YOU ONE AND ALL