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# MOBILE PEDAGOGY FOR ENGLISH LANGUAGE TEACHING AND LEARNING: A CASE STUDY ON THE ENGLISH AS SECOND LANGUAGE LEARNERS

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## ABSTRACT

There have been remarkable changes in the educational field in the twenty-first century and the concept of teaching and learning has taken a new dimension. The old and traditional methods have been avoided by most of the teachers and they have been using the latest methods of teaching. This change is also observed in teaching English also. While teaching to the learners of English as a second language also, the teachers have been implementing all techniques and methods to make the learners understand the concept. In this regard, the teachers are welcoming modern technology in their classrooms. The teachers as well as the learners of English have been using mobile devices on order to make the learning a successful one in the classroom. Since learning through mobile devices creates more interest among the learners, the teachers have been encouraging the learners to use their mobile devices in the classroom. This paper mainly focuses on the mobile pedagogy for English language teaching and learning to teach the learners of English as a second language. It also

**KEYWORDS:** English As A Second Language, English Language Teaching And Learning, Learners, Mobile Pedagogy, Teachers Of English, Technology.

### INTRODUCTION

No one would deny these days that the overall field of instruction as a scientific and educational discipline and, additional significantly, teaching of English, especially, English language teaching (ELT) as a part of it stand out for his or her robust dynamism and continuous evolution and development. The growing range of publications, establishments, organisations, conferences , materials and tests and on ELT clearly indicate that this field has not remained strict and static,

simply the alternative. Since the 1970's with the appearance of the communicative ways and also the robust reaction against the structuralist approaches, ELT has tried and true multiple changes ensuing from a mix of things and variables of various disciplines such as social science, economic and pedagogic among others. These changes have caused within their flip necessary innovations and changes in the areas of teacher coaching and development, program style and materials production. It ought to be borne in mind that associate degree call created relating to the methodology to be utilized in the schoolroom or an innovation introduced within the program trigger in progress alterations within the general context of the instruction and learning method.

Teachers already understand several of the ingredients that may spell success for acquisition and this naturally ends up in thought of however instruction can be increased by the careful use of mobile devices. During this guide we have a tendency to propose a replacement frame of reference designed to stimulate thinking around key aspects of mobile-enabled acquisition activities for college students. One among the key aspects of made mobile learning of English that the framework highlights is that the use of activities that exploit a dynamic language and technology surroundings whereas drawing on the distinctive capabilities of academics and learners.

These days, the art and science of teaching or pedagogy is combined with the term mobile, that refers to learners and acquisition being mobile, moving between places, linking schoolroom learning with work, home, play and alternative areas and clasp varied cultural contexts, communication goals and folks. The word 'mobile' during this context isn't merely similar with a transportable. Mobile pedagogy for ELT sets out a philosophy and proposes a framework to assist guide teacher-thinking once coming up with learning for his or her 'mobile' learners in and on the far side the schoolroom. Mobile pedagogy is associate degree uncommon term since its additional common to speak regarding mobile learning.

The use of mobile devices that are usually in the course of learner quality across numerous contexts and settings put a spotlight on learners and their experiences, however in, therefore doing it should obscure the important role vie by lecturers. According to Rao, P. S. (2018), "The use of mobile phones in English language teaching and learning is one of the developments in EFL/ESL classrooms. Based on the usage, mobile phones are widely used by all EFL/ESL teachers, learners, researchers and educationalists". The approach to mobile pedagogy for West Germanic language teaching is predicated on the idea that lecturers and learners square measure active participants in creating and shaping acquisition. 'Language learning' is that the development of social communication resources that square measure multimodal, however among that language is that the primary resource. Language resources comprise information of the system (phonology, lexis, descriptive linguistics and discourse) and language use (the exploitation of the system so as to speak meaningfully in context). Active participation in pedagogy and learning implies that learners take responsibility for his or her own learning which lecturers play their part in facultative this.

Mobile learning facilitates this by strengthening connections between individuals, and between the places wherever language is learned and used. Mobile learning takes advantage of powerful options on mobile phones and alternative devices that build it simple for users to make straightforward content (photos, videos, texts, recordings) and to share them with others. It also can build use of device options that observe a user's location and their movements.

### **REVIEW OF LITERATURE**

Norris, Australopithecus Afarensis and Kukulska-Hulme, Agnes (2017) found out that academics from all sectors, together with second and foreign language academics, area unit inspired to develop confidence in their evolving pedagogical and digital practices via the appliance of twenty first Century skills and by changing into at home with continued skilled development (CPD) frameworks wherever style of learning is connected to task and technology. An absence of familiarity with task style for Mobile Assisted Language Learning (MALL) on the part of preservice English academics contrasts with the substantial body of analysis exploring its potential edges. The Mobile Pedagogy for West Germanic Teaching project, funded by a grant from land Council analysis Partnerships theme in 2014-15, sought-after to deal with this issue by providing an education framework for the planning of MALL that's in tune with the broader world of informal learning outside the schoolroom. On the far side our analysis during this project, the primary author has worked with European primary and secondary language and subject academics on EU-funded CPD. This chapter attracts upon insights gained from the project and from operating with the academics. We offer samples of adjustable tasks for cooperative, body action analysis and coming up with, and tips for CPD and coaching. Finally we advise areas and directions for future work.

In the findings of Ann Webster-Wright (2017), continuing to apprentice is universally accustomed and accepted by professionals and added stakeholders beyond all professions. However, admitting changes in acknowledgment to analysis allegation about how professionals learn, abounding able development practices still focus on carrying agreeable rather than acceptable learning. In exploring affidavit for the assiduity of academic practices in able development, this commodity critiques the accepted abstraction of able development through a analysis of contemporary abstract beyond professions. An another abstraction is proposed, based on abstract assumptions coinciding with affirmation about able acquirements from seminal educational analysis of the accomplished two decades. An altercation is presented for a aboutface in address and focus from carrying and evaluating able development programs to compassionate and acknowledging accurate able learning.

Dolby, N. (2017) stated that until recently, all-embracing apprenticeship has existed at the margins of educational research. However, in the accepted ambience of globalization, allembracing apprenticeship has confused afterpiece to the centermost of educational analysis throughout the world. In this article, the authors identify, describe, and assay six audible analysis approaches to all-embracing education: allusive and all-embracing education, internationalization of college education, all-embracing schools, all-embracing analysis on teaching and abecedary education, internationalization of K-12 education, and globalization of education. Aural anniversary approach, the authors altercate the actual ambience and the allaround political, economic, social, and cultural accouterment that accept shaped the analysis approach; map the above analysis trajectories that accept developed; altercate the admirers and analysis community; and assay strengths and weaknesses. The authors achieve with an altercation of appearing trends aural analysis in all-embracing education.

Shalendra Kumar (2016) stated that within the twenty first century, learning technologies have progressively become pervasive inside varied kinds of learning environments. Establishments of upper education square measure progressively turning to those technologies to resource and

support their teaching and learning environments underneath distributed circumstances, face-toface or amalgamated. Recently, the Fijian Ministry of Education consistently introduced learning technologies into Fiji's technical schools to support teaching and learning. However, before the widespread preparation of those technologies, very little info was on the market on educators' perception of the worth of those technologies, and therefore the extent to that this might influence adoption. the aim of this study was to realize a higher understanding of lecturers' perceptions of the worth of learning technologies and factors probably to influence their selections to adopt and integrate these technologies into teaching furthermore as challenges they're probably to face.

Hanushek, E.A. (2007) stated that new empirical results show the importance of both minimal and excessive-stage skills, the complementarily of talents and the nice of monetary establishments, and the robustness of the relationship between capabilities and increase. International comparisons incorporating increased records on cognitive abilities screen much larger skill deficits in growing countries than normally derived from simply faculty enrollment and attainment. The value of alternate wanted makes it clear that closing the monetary gap with business nations will require major structural adjustments in training establishments.

Bellani Pasha Shiak (2016) found out that India has the additional bigger arrangement of ancestry in the world. About 6 actor academy agents are alive in the country at altered levels of ancestry like pre-primary, primary, accessory schools, college accessory academy etc. In India not alone in the academy arrangement but as well in the amusing arrangement as a agitator of change and development throughout the preset arrangement of Abecedary Apprenticeship in our Country, one can say after any abhorrence of bucking that it is in abysmal crisis. Abecedary is the key agency of all mental, amusing and airy development of children. Agent's quality, ability of technology, class is the important challenges faced by abecedary apprenticeship in the ambience of globalization.

Robin Mayes (2015) claimed that computers had alone alien the new botheration of acquirements to use them effectively. This is abnormally accurate in 2015 with attention to able new educational technologies. This commodity describes the challenges that 21st anon educational technologists are, and will be, acclamation as they undertake the able affiliation of new technologies into K-12 educational systems and acquirements environments. The accretion Internet, anytime added able adaptable devices, and added innovations accomplish the assignment of designing able academic and breezy acquirements challenging, abnormally in ablaze of the top amount of change in these new technologies. While these technologies acquaint abounding benefits, they are as well causing austere threats to arrangement aegis and claimed privacy. Furthermore, as these technologies abide to evolve, ethical issues such as according admission to assets become imperative. Educational technologists accept to aggrandize their forward-thinking administration and planning competencies so as to ensure able use of new technologies.

Scott E. Hamm (2014) stated that mobile devices offer data access all the time and all over. the style within which we tend to access knowledge has become a pin of our social, vocational, and academic attribute. The developing media by that data is engaged area unit establishing themselves as a pervasive a part of our ecology. Individuals expect to be ready to perform life tasks-work, study, and play-all the time and all over. This reality is remodeling education and the

twenty-first century pedagogy is rising that necessitates a research-informed approach to the combination of theory and implementation. As quality affords new and exciting ways that to engender informal learning among the academy, we are going to explore associate evidence-based pedagogy that augments, extends, and constructs learning as a results of mobility's affordances.

Kukulska-Hulme, A; Norris, L and J. Donohue (2015) stated that in teaching and learning, we've got tons to decide on from the globe of technology: Radio, TV, CD Rom, Computers, CALL, the net, machine readable dictionary, Email, Blogs and Audio Cassettes, wall plug, Videos, DVD's or VCD's. The last twenty years have witnessed a revolution thanks to onset of technology, and has modified the dynamics of assorted industries, and has additionally influenced the industries and also the method individuals act and add the society. This speedy rising and development of knowledge technology has offered an improved pattern to explore the new teaching model. As a result technology plays an awfully necessary role in English teaching. Exploitation multimedia system to form a context to show English has its distinctive benefits. This paper tries to investigate the need of multimedia system technology to teaching and additionally brings out the issues moon-faced by exploitation these technologies. It additionally aims to create English academics responsive to the methods to use it in a good manner.

Menezes, V. (2011) found out that the twenty-first century is the age of globalisation and is vital to know on numerous foreign languages and West Germanic comes first. English Language Teaching has been with North American country for several years and its significance continues to grow, fuelled, part by the net. This suggests that there have been a couple of billion English learners- however a decade later the numbers doubled. The forecast points to a surge in English learning that has peaked in 2010. Identical study indicates that over eightieth of knowledge keep on the net is in English. For the primary time, there are unit a lot of non-native than native users of the language and variety of context in terms of learners, age, status, learning background etcetera has become a process characteristic of ELT nowadays.

### How Mobile Learning is Useful for Learners in the Classrooms



The above diagram unveils that the learners get an entirely a new environment and novel experience through mobile learning when they learn their lessons in the ESL classrooms. Mobile learning facilitates the learners to learn on their own by using their mobile devices. This really changes their learning styles and they can learn anytime and anywhere without any interruption. Mobile learning also changes the attitude of learners since they use the devices on their own. It is apt to quote Rao, P. S. (2019a) who says, "Mobile phones have brought a great impact upon EFL/ESL learning due to its more convenience of usage and it is otherwise an effective alternative of the conventional teaching". Therefore, they can browse the net for getting any kind of information using their mobile devices. They can also download the material related to their learning and also get the information instantaneously whatever they need. It gives the learner more satisfaction in achieving the things they need to improve their learning. Since the learners use their mobile devices in and outside their classrooms in order to develop their learning skills, it is the latest innovation for the learners to learn with utmost interest. The ESL learners can learn grammar, vocabulary, pronunciation, reading comprehension, speaking techniques and so on using the mobile devices round the clock. It also reduces the burden of the teachers of English in clarifying their learners' doubts, giving additional information and supplying addition material. Furthermore, the learners can have a good practice of the lessons taught in the ESL classroom by doing several exercises related to the topic. This kind of practice really improves the ESL learners' learning skills and leads them to be independent learners. Hence, mobile learning is more suitable for the ESL classrooms and the teachers have to always encourage the learners to use the mobile devices frequently to learn things on their own.





Fig.: Advantages of Mobile Pedagogy in ESL Classrooms

There are many advantages of mobile phones to make the learning successful by the teachers of English in the ESL classrooms. They can use the mobile devices to make their teaching and learning a successful and fruitful one in the ESL classrooms. The teachers of English should always present their lessons using PowerPoint presentations with the support of multi-media in order to bring the attention of the whole class. The teachers should also try to get new information from the internet and pass it on to the learners. Simultaneously, the learners should also get information about any topic instantaneously using their mobile devices and exchange the information with both their peers and teachers and give or get feedback with their peers,

welcome feedback from their teachers and also send mails to their peers and teachers and so on. As long as the learners use their mobile devices for useful purposes, the teachers should always encourage them to use the mobile devices. It is the duty of the teachers of English to educate them on the usage of mobile phones such as leaning a new language, getting useful information, getting knowledge, knowing new things, etc. so that the leaners may not misuse them for any other harmful deeds. The teachers of English should always advise the learners to use their mobile devices to develop their language skills. Moreover, the teachers should also advise them to use the mobile devices for reading news, writing down ideas, carrying out tests, taking pictures, making videos, reading e-books, listening to music and news, watching movies and cartoons and even for playing games. Moreover, the learners can improve their vocabulary and the learning will be more effective since vocabulary learning is assisted by pictorial annotation. At this juncture, it is wise to quote Rao, P. S. (2019b) who asserts, "Teachers of English should not go on simply adding technology to make the learning environment effective and efficient. They should plan for the creative and efficient use of these latest innovative technologies as well as teaching techniques, methods in their classrooms in order to make the learners more active and energetic". Therefore, teachers should always use mobile devices for pedagogical purposes so that it creates interest among the ESL learners and encourages them to learn many more new concepts.

### Analysis

### Questionnaire

Q1. Do you agree that classroom mobile pedagogy helps you a lot to teach language in your classroom comfortably?

- a) Always agree
- b) Sometimes agree
- c) Never agree
- d) Never disagree
- e) Sometimes disagree
- f) Always disagree

Q2. Do you agree that learners give positive response and feedback toward the application of mobile pedagogy for teaching English as second language in the classroom?

- a) Always agree
- b) Sometimes agree
- c) Never agree
- d) Never disagree
- e) Sometimes disagree
- f) Always disagree

Q3. Do you agree that both second language learners and teachers are comfortable in ELT classroom?

- a) Always agree
- b) Sometimes agree
- c) Never agree
- d) Never disagree

- e) Sometimes disagree
- f) Always disagree

Q4. Do you agree that teachers should get extra training to become compatible while using mobile pedagogy in English language teaching classroom?

- a) Always agree
- b) Sometimes agree
- c) Never agree
- d) Never disagree
- e) Sometimes disagree
- f) Always disagree

Q5. Do you agree that using technology helps you teach and communicate with your learners in much better way as compared to the traditional classroom?

- a) Always agree
- b) Sometimes agree
- c) Never agree
- d) Never disagree
- e) Sometimes disagree
- f) Always disagree

Q6. Do you agree that mobile pedagogy for English language teaching and learning is good for learners especially, for second language learners, as it focuses on all the skills like listening, speaking and writing also?

- a) Always agree
- b) Sometimes agree
- c) Never agree
- d) Never disagree
- e) Sometimes disagree
- f) Always disagree

Q7. Do you agree that learners are benefited a lot by the implementation of mobile pedagogy for ELT in their learning?

- a) Always agree
- b) Sometimes agree
- c) Never agree
- d) Never disagree
- e) Sometimes disagree
- f) Always disagree

### **Assessment of Collected Data**

The researcher knows it is the time of technology in every sphere. The researcher asked the respondents whether they agree that mobile pedagogy helps the teachers a lot to teach language in classroom comfortably. In this regard, the respondents were not similarly responsive. Hence, the overall response for the question is as mentioned below in the table and chart.

### TABLE 1: DATA COLLECTED AS PER RESPONSE FOR THE QUESTION NUMBER

$\mathbf{I}$				
S. no.	Variable	Data collected		
1	Always agree	130		
2	Sometimes agree	058		
3	Never agree	030		
4	Never disagree	027		
5	Sometimes disagree	000		
6	Always disagree	005		



Chart 1: Data collected as per response for the question number 1

Teacher's performance was judged by the feedback of learners' satisfaction is necessary. Keeping this in mind, it was asked to the respondents whether they agree that learners give positive response and feedback toward use of mobile pedagogy in the learning of English language in the classroom. In this regard, the respondents were not similarly responsive. Hence, overall response for the question is as mentioned below in the table and chart.

2				
S. no.	Variable	Data collected		
1	Always agree	65		
2	Sometimes agree	112		
3	Never agree	26		
4	Never disagree	3		
5	Sometimes disagree	14		
6	Always disagree	30		

### TABLE 2: DATA COLLECTED AS PER RESPONSE FOR THE QUESTION NUMBER



### Chart 2: Data collected as per response for the question number 2

Classroom environment should be favorable to all so that students can learn easily and teachers can teach better. Hence, the researcher asked the respondents whether they agree that both teachers and second language learners are comfortable in ELT classroom. In this regard, the researcher got the response as mentioned below in the table and chart.

TABLE 3: DATA COLLECTED AS PER RESPONSE FOR THE QUESTION NUMBER 3				
S. no.	Variable	Data collected		
1	Always agree	77		
2	Sometimes agree	107		
3	Never agree	21		
4	Never disagree	34		
5	Sometimes disagree	1		
6	Always disagree	10		

## TABLE 3: DATA COLLECTED AS PER RESPONSE FOR THE QUESTION NUMBER 3



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The researcher further asked the respondents whether they agree that teachers should get extra training to become compatible while using mobile pedagogy in English language teaching classroom. In this regard, all the respondents were almost similarly responsive, as they agree that training makes them perfect in their work and improves result.

S. no.	Variable	Data collected	
1	Always agree	133	
2	Sometimes agree	56	
3	Never agree	34	
4	Never disagree	23	
5	Sometimes disagree	04	
6	Always disagree	00	

#### TABLE 4: DATA COLLECTED AS PER RESPONSE FOR THE QUESTION NUMBER 4



Chart 4: Data collected as per response for the question number 4

When the researcher asked the respondents whether they agree that using technology or mobile pedagogy helps them to teach and communicate with your students in much better way as compared to the traditional classroom, the researcher got the feedback from the respondents as mentioned below.

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S. no.	Variable	Data collected
1	Always agree	110
2	Sometimes agree	52
3	Never agree	22
4	Never disagree	32
5	Sometimes disagree	14
6	Always disagree	20

#### **TABLE 5: DATA COLLECTED AS PER RESPONSE FOR THE QUESTION NUMBER 5**



Chart 5: Data collected as per response for the question number 5

Language proficiency depends upon the skill development, in which ELT class plays an important role. Hence, when the researcher asked the respondents whether they agree mobile pedagogy for English language teaching and learning is good for students(specially for second language learner) as it focuses on all the skills like writing, listening and speaking also, we got response as tabulated below.

S. no.	Variable	Data collected	
1	Always agree	124	
2	Sometimes agree	50	
3	Never agree	43	
4	Never disagree	2	
5	Sometimes disagree	1	
6	Always disagree	30	

TABLE 6: DATA	COLLECTED	AS PER RES	SPONSE FOR	THE OU	<b>UESTION NUN</b>	MBER 6
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The researcher also asked the respondents whether they agree that students are benefited a lot by the implementation of mobile pedagogy for ELT in their study. In this regard all the respondents gave different response which is depicted in the form of chart and table as below.

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S. no.	Variable	Data collected	
1	Always agree	45	
2	Sometimes agree	141	
3	Never agree	0	
4	Never disagree	11	
5	Sometimes disagree	03	
6	Always disagree	50	

### TABLE 7: DATA COLLECTED AS PER RESPONSE FOR THE QUESTION NUMBER 7



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### DISCUSSION

Technology has accompanied the method of pedagogy and learning for several years. Container players and TV were ancient primitive technological tools that were used in language categories as education aids.

Today, after we believe technology, the primary equipment that seems in our vision is that the pc. Likewise, within the field of West Germanic language teaching, pc may be a smart equipment, particularly since it's been complemented with the affiliation to the net that's why a good deal of studies has been dispensed to research the effects of computer-based or web-based acquisition within the instructional environments.

The recent internet based mostly technologies utilized in foreign language instruction is internet a pair of tools. The most typical tools of internet a pair of embrace wiki, blog, podcast, social network and video conferencing have incontestable the potential of the current technology in language teaching and learning. Studies have unconcealed that wikis are helpful tools for learning and teaching as they supply cooperative writing. Likewise, blogs or text formatted journal entries by users, will improve writing skills, promote active learning, and supply feedback for college students and lecturers. Language learners commonly use blogs in their categories to reinforce each writing and reading skills.

The above tools were ancient primitive technological tools that were used in language categories as educational aids. Today, after we believe technology, the primary equipment that seems in our vision is that the computer as well as the mobile through various apps. Likewise, within the field of West Germanic language teaching, mobiles app and many different software developed which is running through web with the help of computer, and be a smart equipment, particularly since it's been complemented with the affiliation to the net that's why a good deal of studies has been dispensed to research the effects of computer-based or web-based acquisition within the instructional environments.

### The Various Ways to Implement Mobile Pedagogy

- Incorporate tasks concerning learners' communicative wants among and on the far side the classroom.
- Expose learners to language as a dynamic system.
- > Integrate the four skills of speaking, listening, reading and writing.
- > Provide learners with timely feedback and scaffolding.
- Give opportunities for learners to act socially, hash out that means and manufacture varied and artistic communication with peers and with West Germanic users on the far side the schoolroom across boundaries of your time and place.
- Enable learners to practise speech and writing, which may be notably difficult in an exceedingly schoolroom setting.
- Encourage learners to develop skills in 'learning a way to learn' and attend advertently to the training process.
- > Allow learners decisions in what and the way to learn.
- > Contribute to learners' sense of progress and action.

Therefore, the teachers of English should always encourage the learners of English as a second language to use mobile devices in the classroom so that the learning will be continued without

boring. Since the learners are using their own devices in and outside the classroom, they can learn English at their own time and place. Hence, the teachers should continuously motivate their learners in using the mobile devices for educational purposes and also educate them about the advantages of mobile devices in enhancing the language skills of English.

### CONCLUSION

The twenty-first century teachers of English have been trying to implement several new strategies for the second language learners of English. In this regard, the ESL teachers already recognize several of the ingredients that may spell success for acquisition and this naturally results in thought of however teaching can be increased by the careful use of mobile devices. Hence, mobile pedagogy proposes a brand new frame of reference designed to stimulate thinking around key aspects of mobile-enabled acquisition activities for college students. One in all, the key aspect in mobile learning of English is that the framework highlights the use of activities that exploit a dynamic language and technology atmosphere whereas drawing on the distinctive capabilities of academics and learners. Moreover, the learners should be given an opportunity to work in groups and pairs so that the learners can get a chance to learn the things from their peers. In this context, it is apt to quote Rao, P. S. (2019c) who states, "By implementing collaborative approach in performing the given tasks, the learners will be able to work on their own and even the average learners can learn many things and contribute something to finish their tasks successfully". Therefore, the teachers should always encourage the learners to form groups and pairs to perform the given tasks by using their mobile devices. As a result, the learners learn many new things from their peers and make the learning in a friendly and congenial environment.

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## RICE HUSK AND MAIZE STEM POWDER: POWERFUL ADSORPTIVE REMOVER OF CHROMIUM

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## ABSTRACT

Chromium is released into water bodies through metallurgical operations, metal finishing, steel alloy and chrome plating. Various techniques for removal of hexavalent chromium from aqueous medium such as ion exchange, coagulation, membrane filtration, electro dialysis are available. The mutagenic and carcinogenic properties of hexavalent Chromium required the need of remedial measures using rice husk and maize stem powder to avoid high cost involved in traditional methods. Agriculture by products and wastes have been exploited for remediation of Cr (VI) in order to know the feasibility of biosorption. Carboxylic acid group, hydroxyl group, lignin and carbohydrate present in rice husk and maize stem increase the adsorption potential for Cr (VI). 2 ppm initial concentration of Cr (VI) is treated with 1 gm rice husk up to 1 hour, 2 hours and 3 hours and 2 gm and 3 gm rice husk up to 1 hour decreased the concentration up to a minimum of 0.13 ppm while in case of maize stem powder the equilibrium concentration was 0.247 ppm at pH 7.00. A Langmuir adsorption isotherm has been tested from available data. Adsorptive removal of Cr (VI) follows first order kinetics.

### **KEYWORDS:** Biosorption, Chromium (VI), Remediation, Langmuir, Rice Husk.

### INTRODUCTION

Carcinogenic properties of hexavalent chromium have drawn the attention of researchers worldwide. Chromium (VI) more than permissible limit in drinking water causes liver cancer and other health problems due to its high toxicity<sup>1-2</sup>. The source of Cr (VI) in aqueous medium is both from chromite ore, industries and anthropogenic wastewater discharged from industries, leather tanning chrome plating and use as an anticorrosive agent are causing damage to the living

organisms in water bodies. At pH 4-6, chromium is present in water as HCrO<sub>4</sub>-. Traditional methods of removal of Cr (VI) from aqueous medium are already in practice<sup>3-,5</sup> Necessity of innovative method arose due to easy handling, low cost and abundance in nature<sup>6</sup>. The ability of bentonite minerals as a potential adsorbent of Cr (VI) has been established<sup>7</sup>. High cation exchange capacity and large surface area of bentonite explain adsorption of heavy metals. Adsorption potential of dead biomass has been studied extensively as available in literature<sup>8</sup>. Attempts have been made to study different agriculture bye products and wastes for removal of Cr (VI) from aqueous medium<sup>9-11</sup>. Adsorption of heavy metals depends mainly on ionic interaction on the Surface, surface area, presence of functional group in the agriculture wastes. Polysaccharides e.g. starch, cellulose and lignin are present in agriculture by products. Among functional groups carboxylic (-COOH) and hydroxyl (-OH) groups are present along with amines. Adsorption by rice husk and maize stem powder may be explained due to the presence of polysaccharides, lignin and -COOH groups onto the surface. It is a well known fact that carboxyl, hydroxyl, phosphates and amino groups have the capacity to bind with metals<sup>12</sup>. Keeping in mind these properties and abundance, rice husk and maize stem powder have been selected for study. Rice and maize are the crops extensively grown by the farmers of this area.

After the crop is harvested, rice husk is the waste which can be utilized for adsorption<sup>13</sup>. Two varieties of maize plants are planted and after the harvest maize stems are utilized for adsorption. In addition to this, a number of biomass from agriculture products are available. Adsorption onto the surface of powdered biomass takes place either in a monolayer or multilayer. Freundlich adsorption isotherm is applicable to multilayer adsorption while Langmuir adsorption isotherm is applicable to monolayer adsorption<sup>14</sup>. Adsorption depends on pH, temperature and surface area so it becomes necessary to study adsorption at different pH<sup>15-17</sup> values keeping in mind the suitability and optimum conditions of adsorption. The percentage removal of Cr (VI) and amount

adsorbed in mg /g can be calculated as

ci

% removal =  $\underline{ci-c}$  X100 Where Ci = Initial concentration

Ce = Equilibrium concentration

 $qt = \underline{Ci-Ct}$  m Where m is mass of adsorbent v is volume in lite

<u>t</u> m

### Experimental

Rice husk is collected from the rice mill and maize stems from the maize field. They are repeatedly washed with de ionized water, dried and powdered up to 300 mesh sieve. 1000 ml 2ppm Cr (VI) solution is prepared and 100 ml of this solution is treated with 1 gm rice husk and maize stem powder up to 1 hour, 2 hours and 3 hours. Same experiment is repeated with different masses up to a fixed interval of time. Residual concentration of Cr (VI) is measured spectro photometrically by U.V double beam spectrophotometer 300. F.T.I.R of the rice husk before and after treatment has been done from 4000-500 cm<sup>-1</sup> on F.T.I.R spectrometer. Anhydrous KBr is used as pellet material.

### **RESULTS AND DISCUSSION**

It has become clear from the data that 93.5 % removal of Cr (VI) takes place with 1gm rice husk treated with 100 ml 2 ppm solution at pH 7. At pH 7, removal percentage is 87% when 100 ml 2 ppm Cr (VI) solution is treated with 1 gm maize stem up to 3 hours .At pH 4 percentage removals is up to 79% with rice husk. FTIR of rice husk before and after treatment has been done. S1 and S2 stand for FTIR of rice husk and maize stem before treatment whereas S3 and S4 stand for FTIR of rice husk and maize stem after treatment respectively. Analysis of FTIR peaks of S1( rice husk) clearly shows the peaks at 3340.67 cm<sup>-1</sup> , 2025.3 cm<sup>-1</sup>, 1731.78 cm<sup>-1</sup>,1635.03 cm<sup>-1</sup> indicating N-H stretching vibration, primary and tertiary alcohol group, long chain alcohol showing O-H stretching vibrations around 3448 cm<sup>-1</sup>. It may be concluded that bands at 3300-3500 cm<sup>-1</sup> shows the presence of alcoholic, phenolic or acidic OH with hydrogen bonding. The peak at 2025.30 cm<sup>-1</sup> shows the presence of C≡C group. Ketone or aldehyde around 500<sup>-1</sup> cm may be present. These results indicate that the theoretical values for rice husk agree with the experimental values. Rice husk being an organic compound contains certainly aldehyde or ketone, carboxylic groups and hydroxyl groups.

TABLE-1 CONCENTRATION OF 100 ML 2 PPM CHROMIUM ION AFTERTREATMENT WITH 1 GM RICE HUSK ATPH 7

Initial	Time	Residual	%	qt	log qt	log ct	Ct/qt
concentration		concentration(ct)	removal				
2ppm	1 hour	0.140	93%	0.186	-0.7304	-0.8538	0.7526
2ppm	2 hour	0.130	93.5%	0.187	-0.7281	-0.8860	0.6951
2ppm	3 hour	0.130	93.5%	0.187	-0.7281	-0.8860	0.6951

# TABLE - 2 CONCENTRATION OF 100 ML 2 PPM CHROMIUM ION AFTERTREATMENT WITH DIFFERENT MASSES OF RICE HUSK FOR 1 HOUR

Initial concentration	Time	Weight	Residual concentration
2 ppm	1 hour	1 gm	0.140
2 ppm	1 hour	2 gm	0.130
2 ppm	1 hour	3 gm	0.130

# TABLE-3 CONCENTRATION OF 100 ML 2 PPM CHROMIUM ION AFTERTREATMENT WITH 1 GM MAIZE STEM AT PH 7

Initial	Time	Residual	%	qt	log qt	log ct	Ct/qt
concentration		concentration(ct)	removal				
2ppm	1 hour	0.29	85.5%	0.171	-0.7670	-0.5376	1.695
2ppm	2 hour	0.27	86.5%	0.173	-0.7619	-0.5686	1.560
2ppm	3 hour	0.26	87%	0.174	-0.7594	-0.5850	1.494

# TABLE – 4 CONCENTRATION OF 100 ML 2 PPM CHROMIUM ION AFTERTREATMENT WITH DIFFERENT MASSES OF MAIZE STEM FOR 1HOUR AT PH 7

Initial concentration	Time	Weight	<b>Residual concentration</b>	% Removal
2 ppm	1 hour	1 gm	0.29	85.5%
2 ppm	1 hour	2 gm	0.24	88%
2 ppm	1 hour	3 gm	0.24	88%

# TABLE – 5 CONCENTRATION OF 100 ML 2 PPM CHROMIUM ION AFTERTREATMENT WITH DIFFERENT MASSES OF RICE HUSK AT PH 4

Initial concentration	Time	Weight	<b>Residual concentration</b>	% Removal
2 ppm	1 hour	1 gm	0.45	77.5%
2 ppm	1 hour	2 gm	0.43	78.5%
2 ppm	1 hour	3 gm	0.42	79 %

# TABLE – 6: CONCENTRATION OF 100 ML 2 PPM CHROMIUM ION AFTERTREATMENT WITH DIFFERENT MASSES OF MAIZE STEM AT PH 4

Initial concentration	Time	Weight	<b>Residual concentration</b>	% Removal
2 ppm	1 hour	1 gm	0.37	81.5 %
2 ppm	1 hour	2 gm	0.35	82.5 %
2 ppm	1 hour	3 gm	0.34	83 %









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Figure 4: FTIR of rice husk



Administrator 4850 Sample 4850 By Administrator Date Monday, December 02 2019

**Figure 5: FTIR of maize stem powder** 



Figure 6: FTIR of rice husk after adsorption



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Figure 7: FTIR of maize stem powder after adsorption

Peaks of rice husk in I.R after treatment show that adsorption has taken place. Shifts in peaks of I.R clearly indicate adsorption. FTIR of maize stem also indicates the presence of alcoholic, aromatic and acidic OH with hydrogen bonding. After the adsorption has taken place on the surface of surface of maize stem, the peaks changed. The trends in the FTIR suggest that adsorption has taken place on the surface of maize stem. Active functional sites and functional groups are on the surface of rice husk and maize stem powder. The shifts in percentage transmittance in FTIR before and after adsorption in the range of 4000 cm<sup>-1</sup> to 500 cm<sup>-1</sup> indicate sorption of chromium. Figure 1,2 show percentage removal of Cr(vi) vs. time and figure- 3 represents plot of Ct /qt vs Ct. Linearity of the graph shows that monolayer adsorption takes place on the surface and thus Langmuir adsorption isotherm is followed.

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# ISOLATION OF FORMS TOXIC METALS IN NATURAL WATERS BY ION EXCHANGE METHOD

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## ABSTRACT

To study the forms of finding toxic microelements in natural waters, a technique using ionexchange resins has been developed; KU-2 cation exchanger and AV-17 anion exchanger. Ionites with a grain size of 50–100 mesh were converted into  $H^+$  and  $Cl^-$  forms by treatment with HCl, followed by washing with deionized water.

**KEYWORDS:** Separation of Toxic Elements, Neutron Activation Analysis, Deionized Water, Ion Exchange Resins, KU-2 Cation Exchange Resin, AV-17 Anion Exchange Resin.

### I. INTRODUCTION

A set of methods for determining the forms of heavy metals in precipitation and water was actually created for the first time. Many methodological issues have not been investigated, in particular, the determination of the forms of toxic metals in the aquatic environment. To assess the accuracy and correctness of the separation and the subsequent determination of the forms of toxic metals in the waters, the corresponding radionuclide's in concentrations close to the real environmental conditions are used [1].

## II. THE EXPERIMENTAL PART

Separation of individual forms of toxic metals was carried out as follows: after separation of the suspension by filtering samples of the test water, 200 ml were passed through series-connected polyethylene columns containing cation exchange resin, anion exchange resin and complex-forming ion exchange resin. Column diameter 6 mm, height 50 mm, weight 100-200 mg, elution rate 0.8-0.9 ml/min. At the end of the separation, the ion exchangers were removed from the column, placed in plastic bags and wrapped in aluminum foil. Water passed through a column

with ion exchangers was evaporated to a volume of 4-5 ml (to determine neutral forms), acidified with  $HNO_3$  to pH 2-3, transferred to a quartz ampoule and sealed [2-4]. At the same time, samples were prepared to determine the total content of trace elements in the test water. A sample of the filtrate was concentrated by evaporation to 4-5 ml, acidified with  $HNO_3$  to pH 2-3, transferred to a quartz ampoule and sealed. The samples thus prepared in the place with the corresponding standards were irradiated with thermal neutrons.

FORMS OF THESE ELEMENTS IN RIVER WATER, FLOW RATE 0.9 ML/MIN							
Dadiamualida	nII	Content in fraction, %					
Radionuclide	рп	anion exchange resin	cation exchanger	Neutral forms			
<sup>203</sup> Hg	2,1	98	0,9	1,5			
	2,2	95	1,0	4,0			
	7,2	90	5,0	4,5			
	2,1	5	72	23			
	5,2	11	73	17			
<sup>65</sup> Zn	7,2	8	74	19			
	2,1	8	66	26			
<sup>60</sup> Co	5,2	10	78	12			
	7,2	5,0	75	18			

# TABLE 1. DISTRIBUTION 203HG, 65ZN AND 60CO BETWEEN DIFFERENT IONICFORMS OF THESE ELEMENTS IN RIVER WATER. FLOW RATE 0.9 ML/MIN

## **II. RESULTS AND DISCUSSION**

The correctness of the ion-exchange fractionation of various forms of elements was established as follows. After introducing the cationic radionuclide indicator (pH-1) into the test water, the system was kept for 10-15 days for isotopic exchange. Then it was passed through ion-exchange resins and each fraction was subjected to  $\gamma$ -spectrometric analysis.

In the table. 1 shows the distribution of radionuclide's <sup>203</sup>Hg, <sup>65</sup>Zn and <sup>60</sup>Co introduced into the water p. Surkhandarya at various pH values of water. As can be seen, the cationic form of labeled zinc and cobalt is quantitatively sorbed on cation exchange resin. Due to isotopic exchange, the introduced cationic form of mercury goes into the anionic form and is quantitatively sorbed on the anion exchange resin.

A significant amount (10-25%) of labeled zinc and cobalt goes into neutral forms.

# TABLE 2. THE DEGREE OF SORPTION OF ZINC-65 ON CATION EXCHANGERKUX2X8, PH = 5.5. TRANSMISSION RATE 0.9 ML/MIN

Introduced into the solution,	Sorbed on KU-2 cation exchanger,	Sorption percentage
imp/min	imp/min	I I I I I I I I I I I I I I I I I I I
1200	1120	97
1350	1300	98
1490	1400	97
940	900	99
1320	1290	98

MIGRATION OF MERCURY, ZINC AND COBALT IN WATER, MG/L							
An object (date of selection)	Eleme nt	Weighted form (0.45 µm)	The total amount of soluble form	Cationic	Anionic	Neutral	
River water (10.05.90)	Hg Zn Co	0,60±0,07 5,8±0,9 0,70±0,05	4,1±5 21,8±2,2 0,11±0,06	0,9±0,1 8,9±0,9 0,08±0,01	1,4±0,1 2,9 0,002±0, 0002	1,9±0,2 9,0±1,0 0,018± 0,02	
Polluted natural water (16.04.90)	Hg Zn Co	0,20±0,02 44±5 2,3±0,2	4,2±0,6 22±2 0,50±0,051	$1,0\pm0,1$ $14\pm1$ $0,45\pm0,03$	3,1±0,3 1,3±0,2 0,0021±0 ,0002	$0,12\pm0,2$ $6,2\pm0,7$ $0,01\pm0,01$	

TABLE 3. DATA OF ION-EXCHANGE SEPARATION OF VARIOUS FORMS OF
MIGRATION OF MERCURY, ZINC AND COBALT IN WATER, MG/L

We studied the chemical yield or completeness of sorption of the studied elements by ion exchangers from real water (immediately after the introduction of the radionuclide in cationic form), bypassing the stage of isotopic exchange. As can be seen from the table. 2, introduced <sup>65</sup>Zn is practically not adsorbed on anion exchange resin and quantitatively adsorbed on cation exchange resin.

As an example, Table 8 shows the data of ion-exchange fractionation and subsequent neutron activation determination of mercury, zinc and cobalt in river and polluted natural water.

With the exception of cobalt data, the total content of elements in individual fractions approaches 100%, which indicates a low degree of contamination of samples or loss of elements (Table 3). A characteristic decrease in the relative content of zinc in suspension in river water and, conversely, an increase in the content of mercury. This can be explained by the geochemical features of this river and polluted natural water in the immediate vicinity of industrial complexes.

The experimental results show that mercury is mainly in the neutral and anionic form, zinc and cobalt migrate in cationic and neutral forms.

Element	HNO <sub>3</sub>	HCl	Deonysis. Water	CHCl <sub>3</sub>	Isobut. alcohol
Hg	<0,1	<0,1	0,05	<0,05	<0,05
Zn	<0,1	<0,1	<0,1	<0,1	<0,1
Cd	<0,1	<0,1	<0,1	<0,1	<0,1
Gr	<0,1	<0,1	<0,1	0,05	0,05
Sb	0,05	0,05	<0,01	<0,01	<0,01
Со	<0,1	<0,1	<0,01	0,05	0,05
Sc	0,02	0,03	0,06	0,05	0,07
Br	0,05	0,08	0,03	0,02	0,05
Ag	0,02	0,04	0,04	0,05	0,05
Au	0,001	0,0005	0,0008	0,0005	0,0001
Fe	3	<5	<5	<1	<1
Nd	0,05	0,09	0,09	0,08	0,07

TABLE 4. THE CONTENT OF IMPURITY ELEMENTS IN THE REAGENTS, NG/ML

The main errors in determining the forms of finding elements by various methods may be changes in the concentration and forms of elements in water after sampling (due to interaction with vessel material), contamination at the fractionation stage is uncontrolled (due to impurities in the reagents and materials used in the process separation of fractions) and methodological errors arising from the assumptions made when developing the separation scheme.

We started the separation of fractions immediately after sampling. In addition, in most cases, due to the relative simplicity of the ion exchange method, fractionation was carried out under field and field conditions, i.e. at the place of sampling of the studied water.

To reduce the contribution of uncontrolled contaminants in our experiments, the reagents were subjected to repeated purification using various physicochemical methods: distillation, extraction, and purification using KU-2x8 and AB-17x8 ion-exchange resins.

The levels of purity achieved for acids, water, chloroform and alcohol can be judged by the data in Table 4.

The achieved reagent purity levels in terms of trace element composition are 3-4 orders of magnitude lower than their content in natural waters. To determine the impurities that make up the ion-exchange resins [2]. The non-destructive activation method for determining 11 elements in various ion-exchange resins is described in [3]. After burning the resin, the ash was irradiated with neutrons and the  $\gamma$  spectrum was recorded using a semiconductor detector. Due to the fact that the burning of resins can cause significant losses of many elements, we examined the possibilities of instrumental neutron activation analysis of resins without their thermal treatment.

		0/0		
Element	Type of ion exchar	nger		
Liement	AV-17x8	KU-2x8	Dowex-2x8	Dowex 50x8
Zn 10 <sup>-5</sup>	2,3±0,3	5,2±0,8	6,1±0,9	1,9±0,2
Fe 10 <sup>-5</sup>	1,2±0,1	8,6±0,8	0,33±0,04	7,2±0,7
Co 10 <sup>-8</sup>	<1	2,7±0,3	<1	<1
Sc 10 <sup>-9</sup>	0,5±0,1	4,9±0,4	0,43±0,03	8,1±0,6
Sb 10 <sup>-6</sup>	1,2±0,1	1,0±0,1	0,55±0,06	0,23±0,03
$Cs \ 10^{-8}$	2,2±0,1	3,2±0,1	2,3±0,1	3,2±0,1
Hg 10 <sup>-7</sup>	4,9±0,6	3,3±0,4	2,1±0,3	1,1±0,1
Gr 10 <sup>-7</sup>	<1	<1	<1	<1
Br 10 <sup>-5</sup>	5,2±0,2	0,02±0,01	3,3±0,2	0,08±0,01
Nd 10 <sup>-5</sup>	1,5±0	8,8±0,3	0,4±0,2	2,3±0,1
Mo 10 <sup>-7</sup>	<5	<5	<5	<5
$W \ 10^{-8}$	<1	<1	<1	<1
Au 10 <sup>-9</sup>	<1	<1	<1	<1
Ag $10^{-8}$	<5	<5	<5	<5

TABLE 5. THE CONTENT OF IMPURITY ELEMENTS IN ION-EXCHANGE RESINS,

Since sulfur is the basis of ion exchangers, and during prolonged irradiation by the nuclear reaction (n, p) 32P is formed, which is a  $\beta$ -emitter, when measuring low-energy  $\gamma$ -lines to reduce

interfering  $\beta$ -radiation, it was cut off by an absorber (aluminum, plexiglass). For those elements that are not detected by activation analysis, in table. 4 shows the limits of detection.

### III. CONCLUSION.

When using ion-exchange resins of the indicated grades for preconcentration, one should take into account the content of impurity elements in them, which can vary from batch to batch (Table 5). In this regard, for preliminary isolation and concentration of heavy metals from aqueous samples, resin was selected from batches containing the least amount of impurity elements.

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## MODELING OF AGRICULTURAL TRACTORS MAINTENANCE FOR INNOVATIVE FORECASTING OF TECHNOLOGICAL EFFECTIVENESS AT THE STAGE OF DESIGNING

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### ABSTRACT

At the stage of design, technological effectiveness of tractor during maintenance predicted based on its operating parameters, taking into account the effective power of engine, the mass of the tractor, the productivity of tractor and other indicators. However, this method does not allow fully predict the operation and maintenance effectiveness of domestic agricultural tractors at the design stage. According to the outline drawings, the number of maintenance operations of the designed new tractor is determined. For example, the washing and cleaning operations must be 30. In this case, the time – consumption for their implementation at TM-1, TM-2 and TM-3, using the above-developed mathematical calculations will be 0.16, 0.47 and 0.73 man per hour respectively. Thus, it is possible to calculate the time-consumption of all types of work during the maintenance, and by summarizing their indicators, we can obtain the time-consumption of full cycle. Dividing this value by the number of the cycles of the new designed tractor (usually this number is 1000 moto-hours), we can find the specific value of total time-consumption for maintenance work.

KEYWORDS: Tractors, Maintenance, Manufacturability Of Structures, Forecasting.

### INTRODUCTION

Here we to present a new method for predicting the time – consuming of various types of work during the maintenance of domestic agricultural tractors at the design stage in order to evaluate the technological effectiveness.

### Main parts

Each type of maintenance (Technical maintenance (TM) gradually divides into several steps TM-1, TM-2 and TM-3; TM-1 means first technical maintenance) includes several types of work: washing and cleaning; controlling and adjustment; controlling and fastening; lubrication; refueling; assembling and disassembling [2]. The time spent on those works was recording while operating. Maintenance was carried out in according to standard manual GOST 20793-86, the research of technical maintenance was carried out on agricultural equipment's park in Jizzakh region of the Republic of Uzbekistan during the cotton harvesting by undergraduate students of Samarkand Institute of Veterinary Medicine, the Faculty of Economics and Agricultural Technology, major "Mechanization of Agricultural Industry". The conditions were chose according to standard manuals GOST 20915-75 and OST 70 / 23.2.7-73.

In order to obtain accurate results, the number of time observations was determined based on GOST 24055-80. Each time series of the obtained time – consuming data checked by the stability coefficient  $K_{st}$ .

$$\mathbf{K}_{\mathrm{st}} = \mathbf{T}_{\mathrm{max}} / \mathbf{T}_{\mathrm{min}} ,$$

Where  $T_{\text{max}},\,T_{\text{min}}$  the maximum and minimum duration of the maintenance time by type of the work, h

Time observation series considered as stable if  $\mathbf{K}_{st} \leq 2,0$ . When processing of each time observation, the dispersion ( $\sigma^2$ ) and coefficient of variation ( $\gamma$ ) were calculated:

$$\sigma^{2} = \sum_{i=1}^{N} \frac{(\mathrm{Ti} - \mathrm{Tav})^{2}}{\mathrm{N} - \mathrm{1}},$$
$$\mathbf{y} = \sigma / \mathrm{T}_{\mathrm{av}},$$

Where  $T_i$  – maintenance time duration of certain type of work, h

T<sub>av</sub> – average time duration of maintenance, h;

N – number of observation;

 $\sigma$ - standard deviation of time series

### $\boldsymbol{\sigma} = \sqrt{\boldsymbol{\sigma}^2}.$

Statistical processing of time series made it possible to establish the average value of time – consumption for various types of work during maintenance of agricultural tractors. These data (man per hours) for some tractors, used for cultivation of cotton and other type of agriculture products in the fields of the Jizzakh region of the Republic of Uzbekistan are given in Table 1.

	Type of tractor				
Type of works	T-28X4M	MT3-80X	MT3-82	ЮМЗ-6М	TT3-80.11
Washing and cleaning;					
TM -1	0,170	0,178	0,200	0,180	0,200
TM -2	0,521	0,528	0,590	0,552	0,607
TM -3	0,895	0,908	1,014	0,948	1,042
Controlling and adjustment					
TM -1	0,135	0,138	0,155	0,142	0,157
TM -2	0,842	0,853	0,954	0,892	0,981
TM -3	6,656	6,756	7,550	7,056	7,750
Controlling and fastening;					
TM -1	0,087	0,089	0,100	0,092	0,100
TM -2	0,152	0,154	0,172	0,161	0,177
TM -3	0,436	0,443	0,495	0,463	0,508
Lubrication					
TM -1	0,021	0,021	0,024	0,022	0,024
TM -2	0,141	0,143	0,160	0,149	0,164
TM -3	0,319	0,324	0,362	0,339	0,372
Refueling					
TM -1	0,143	0,146	0,164	0,151	0,166
TM -2	0,460	0,466	0,521	0,487	0,536
TM -3	0,820	0,832	0,930	0,869	0,955
Assembling and disassembling					
TM -1					
TM -2	0,004	0,007	0,008	0,007	0,008
TM -3	0,054	0,055	0,061	0,057	0,063
	1,523	1,545	1,727	1,614	1,773

# TABLE 1 AVERAGE VALUE OF TIME – CONSUMPTION FOR VARIOUS TYPES OFWORK DURING MAINTENANCE OF AGRICULTURAL TRACTORS

In according to research hold in Jizzakh region, in order to ensure the functionality of tractor, for example for T-28X4, we need to conduct 36 washing and cleaning operations  $(X_1)$ , 378 controlling and adjustment operations  $(X_2)$ , 27 controlling and fastening operations  $(X_3)$ , 8 lubricating operations  $(X_4)$ , 245 refueling operations  $(X_5)$   $\mu$  4 assembling and disassembling operations  $(X_6)$ .

TABLE 2 NUMBER (QUANTITY) OF OPERATIONS ON TECHNICALMAINTENANCE ON EACH TYPE WORK

Quantity of operation in technical service Number (quantity) of operations on technical maintenance						
	X <sub>1</sub>	X2	X <sub>3</sub>	X <sub>4</sub>	X5	X <sub>6</sub>
Tractor type						
ГТЗ-80.11	149	952	27	11	282	8
T-28X4M	36	378	27	8	245	4
MT3-80X	143	507	31	9	255	9

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MT3-82	143	512	31	15	278	9
ЮМЗ-6М	283	222	24	9	477	7

Based on time observations and the analytical processing of those data on a computer, the mathematical models have been created. They are express the functional relationship between the time consumption of each type of maintenance work and the number of operations.

The time – consumption evaluation for controlling and fastening type of works  $(X_3)$  and lubricating works  $(X_4)$  can be approximated by the linear function [2]:

During TM -1	$T_1 = 0,13 + 3,45 \cdot 10^{-5} \cdot X_3;$
	$T_1 = 0,02 + 7,57 \cdot 10^{-4} \cdot X_4,$
During TM -2	$T_2 = 0,19 + 7,76 \cdot 10^{-4} \cdot X_3;$
	$T_2 = 0,13 + 5,11 \cdot 10^{-3} \cdot X_4,$
During TM -3	$T_3 = 0,42 + 4,66 \cdot 10^{-3} \cdot X_3;$
	$T_3 = 0,26 + 1,10 \cdot 10^{-2} \cdot X_4,$

Time – consumption for washing & cleaning  $(X_1)$  and refueling  $(X_5)$  works can be approximated by the power function

During TM -1	$T_1 = 0.06 \cdot X_1^{0.30};$
	$T_1 = 0,10 \cdot X_5^{0,12},$
During TM - 2	$T_2 = 0,20 \cdot X_1^{0,25};$
	$T_2 = 0,19 \cdot X_5^{0,20},$
During TM -3	$T_3 = 0,30 \cdot X_1^{0,26};$
	$T_3 = 0,11 \cdot X_5^{0,37},$

For controlling & adjustment (X2), assembling & disassembling ( $X_6$ ) works – using exponential function:

During TM -1 $T_1 = 0,220 \cdot \exp(1, 8 \cdot 10^{-5} \cdot X_2);$  $T_1 = 0,007 \cdot \exp(0,035 \cdot X_6),$ During TM -2 $T_2 = 0,77 \cdot \exp(1, 9 \cdot 10^{-4} \cdot X_2);$  $T_2 = 0,06 \cdot \exp(0,02 \cdot X_6),$ During TM -3 $T_3 = 1,98 \cdot \exp(6, 0 \cdot 10^{-4} \cdot X_2);$  $T_3 = 2,05 \cdot \exp(0,01 \cdot X_6).$ 

The correlation coefficients of above-mentioned models are not less than 0.67, and the dispersion is not more than 0.05, which confirms the reliability of the results [2].

Using the above-developed model is possible to predict the time-consumption during tractor maintenance for different type of work at the designing stage. Suppose, because of moral obsolescence the new modification of T-28X4 tractor being designed. According to the outline

drawings, the number of maintenance operations of the designed new tractor is determined. For example, the washing and cleaning operations must be 30. In this case, the time – consumption for their implementation at TM-1, TM-2 and TM-3, using the above-developed mathematical calculations will be 0.16, 0.47 and 0.73 man per hour respectively.

### CONCLUSION

Thus, it is possible to calculate the time-consumption of all types of work during the maintenance, and by summarizing their indicators, we can obtain the time-consumption of full cycle. Dividing this value by the number of the cycles of the new designed tractor (usually this number is 1000 moto-hours), we can find the specific value of total time-consumption for maintenance work. For the T-28X4 type of tractors (class 0.6), it should not exceed 0.015 manhours / motor-hours. [3]. If the result is greater or equal than the standard specific value, the designers of the Tashkent Tractor Factory should to find the ways to reduce the number of maintenance operations.

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# DOI NUMBER: 10.5958/2249-7137.2020.00005.1 INDIA'S RELATION WITH TURKMENISTAN: PERSPECTIVES AND CHALLENGES Nakul Bhardwaj\*

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## ABSTRACT

The relation between India and Turkmenistan is very ancient, from the time of Silk Road the relation flourished and reached at its zenith during the medieval times. For a long time Turkmenistan was a pass for long trade and commerce, also it was the region for various Indo-European-Iranian tribes those travelled and shared their cultural capital through this region. Indian culture was spread to this region by the expansion of Buddhism in ancient times and from that period of time the Turks and Indians come together to know each other. For a long time Turkmenistan was a part of USSR and after its independence from it became a sovereign state on 27 October 1991. From the emergence of Turkmenistan as an Independent state, India is having friendly relations with it. From the Indian point of view Turkmenistan is very important for our energy security as well. The TAPI gas pipeline project is one of the examples of our mutual ties between both of the countries. In order to strengthen our defence and security in relation to Pakistan and Taliban, Turkmenistan is geo-strategic location for India. In terms of economy and culture both the countries are having strong people to people connect with is a real capital for both of them. In the early 18th century the Persians annexed Khivan and Bukharan territories, but Bukhara regained its power in the latter half of the century and retook Merv and deported its entire population to Bukhara.

**KEYWORDS:** *Mutual Cooperation, Diplomatic Ties, Socio-Cultural Relations, Energy Security* 

### INTRODUCTION

Turkmenistan, a land locked desert country, is one of the five newly independent states that also include Kazakhstan, Uzbekistan, Kyrgyzstan and Tajikistan. It declared independence on October 27, 1991 from Soviet Union. It has 4,88,100 square kilometres of the total area and shares boundaries with Uzbekistan to the north, Kazakhstan to the northwest, has on the west the Caspian Sea and is flanked in the south by Iran and understanding with Russia since early 1992. Russian interest centres on the fact that Turkmenistan is a large country on the southern periphery of the former Soviet Union has great economic potential, rich natural resources and a sparse population. The republic of Turkmenistan, formerly the Turkmen Soviet Socialist Republic, is situated in the south west of Central Asia. The Turkmen are descendants of the Oghuz tribes who migrated to Central Asia in .about the 10th Century A.D. By the 15th Century they have emerged as a distinct ethnic group but were divided by tribal loyalties and territorial division between neighbouring powers. From the 15th to the 17th centuries the southern tribes were under Persian rule, while the north was under the suzerainty of the (Uzbek) Khanates of Khiva and Bukhara. In the early 18th century the Persians annexed Khivan and Bukharan territories, but Bukhara regained its power in the latter half of the century and retook Merv and deported its entire population to Bukhara.

### Strategic importance of Turkmenistan

India attaches great importance to its relations with Turkmenistan. India was one of the first countries to recognize Turkmenistan's independence. In 1993 India opened its resident diplomatic mission in Turkmenistan and since then ties between the two have been developing in a mutually beneficial manner. There are also great commonalities of interest between the two countries. While India appreciates Turkmenistan's pragmatic foreign policy of 'positive neutrality',15 Turkmenistan has supported India's candidacy to various international organizations and forums.16 India has been working towards developing close political and economic ties with this resource rich country. However, given the current status of relations much need to be done as there lays immense potential for cooperation in various sectors for both India and Turkmenistan. The Indian prime minister's visit to Ashgabat in 1995 marked the beginning of a close cooperation between the two countries. Six bilateral agreements were signed during this visit which opened a new chapter in India-Central Asia relations. The number of visits (see Table 4) made by Indian leaders indicates New Delhi's interest in forging close cooperation with Turkmenistan. The momentum of visit was somewhat slow during the period 2000-2004. However, during 2005-2007 India once again made efforts to cement these ties. There were important visits made by MOS (EA) and minister of water resources to Turkmenistan. In fact, the momentum of cooperation got major push during 2008-2010. Similarly, visits by Turkmen leader's side (see Table 5) show an equal keenness on their part to enhance cooperation with India. Many important measures were incorporated in the Turkmen-Indian Memorandum signed on 25 February 1997. However, during 2000-2007 periods, there were no major visits from Turkmen side. The new impetus was given to India-Turkmen ties during the visit of President Berdimuhamedov to Delhi in May 2010. This was an attempt by the current government to consolidate the existing ties between the two countries.

Hon'ble Prime Minister, Mr Narendra Modi visited Turkmenistan from 10 to 11 July 2015. It was a historic visit given that an Indian Prime Minister had visited Turkmenistan after 20 years.

He had tete-a-tete with Turkmen President followed by delegation level talks and signing of documents on 11 July and thereafter both leaders issued a joint statement. Hon'ble PM also inaugurated the Yoga and Traditional Medicine Centre in Ashgabat, the first of its kind in the region, unveiled a bust of Mahatma Gandhi and interacted with students of Azadi University of Foreign Languages who are learning Hindi.

### **Energy resources**

Turkmenistan strategic reserves of natural gas and oil (See Map 1 below) make it an important country in the region. Although there are some differences over the exact quantum of oil reserves it does have substantial natural gas reserves. According to the BP Statistical Review 2010, it occupies fourth position in the world with 8.10 trillion cubic metres (tcm) of proven natural gas reserves (Table 2) and 0.6 billion barrels of proven oil reserves (Table 3). Turkmenistan's domestic consumers have been getting natural gas for free since 1993. Not surprisingly, then it has the fastest consumption growth in the region, averaging 16.1 percent annually from 2000 to 2006, as compared Today, Turkmenistan has become an area of competition for existing and aspiring powers like the US, Russia, EU, China, India, Pakistan, Turkey and Iran. In the current geopolitical context, Turkmenistan has adopted a pragmatic energy policy of diversification of its energy routes. Under the new stated energy policy, Turkmenistan is attempting to engage countries both in Europe and Asia. In midAugust 2010, Turkmenistan announced a new gas export policy which focused on cooperation with Europe, China and the possibility of a greater engagement with South Asia as well. However policy gives marginal preference to Iran and Russia.18 Given its historical links with Russia it may not be possible for Turkmenistan to ignore Russia but the new energy policy definitely marks a clear shift from the past. In the future, Russia may have to adjust to Ashgabad's policy of diversifying its energy exports to Europe and Asia – independent of Russian influence.

From the Indian perspective, the importance of Turkmenistan's energy resources has to be viewed in the context of its rising demand for energy. India imports 70 per cent of its oil requirements and this is likely to go up to 90 per cent by 2025. India's demand for natural gas for the non-power sector alone is expected to increase from 120 million cubic meters a day (mcmd) to 391 mcmd by 2025.19 India's gas consumption, at 41.7 billion cum, is 10 times higher than its production which is 31.7 billion cum20 (see Table 1). This enhances Turkmenistan's importance for India in meeting its future gas demand.

India's 'Connect Central Asia' policy 2012 envisages deeper mutual relations with the region and energy linkage is an important component of the policy. India considers TAPI pipeline a 'key pillar' in its economic relations with Turkmenistan. Participating in the ceremony joined by President of Turkmenistan Gurbanguly Berdimuhamedov, Afghanistan President Ashraf Ghani and Pakistan Prime Minister Nawaz Sharif, Vice President Hamid Ansari said that TAPI marks 'the first step' towards achieving the vision of 'an economically integrated region stretching from the Bay of Bengal to the Caspian Sea.' The pipeline is expected to be operational from December 2019. The successful implementation of TAPI project will not only benefit the source country, but will also ensure affordable energy to the other three participating countries, besides economically integrating South Asia and Central Asia. Afghanistan will also earn transit fees and certain amount of gas and can start the process of industrialization along the gas pipeline route, generating employment for the country's youth. The demand for energy in India and Pakistan is estimated to increase and TAPI can become an important source to maintain the growth momentum. The pipeline is backed by the World Bank and considered a win-win project for all stakeholders.

### Importance of Turkmenistan for India

Turkmenistan's importance in the regional context The importance of Turkmenistan needs to be viewed in the context of the complex regional environment in Central Asia and Af-Pak region. New Delhi's policy towards this region has been shaped by its security concerns in relation to Pakistan and Afghanistan. Today, new alignments and partnerships are being forged in the region to address the challenges emerging from Af-Pak region. While the US is looking for an exit strategy from Afghanistan, regional countries are evolving new bilateral, trilateral and multilateral mechanisms to address the challenges posed by this volatile region. Some of these Iran–Afghanistan– between: Iran–Afghanistan–Pakistan–Turkey; Pakistan–Russia: are Afghanistan-Pakistan-Tajikistan; and Tajikistan-Iran-Afghanistan. India is yet not a party to any of these regional mechanisms. In the past, India has very successfully cooperated with Russia, CARs and Iran to address the security concerns in the region. However, in the light of new regional cooperative mechanisms which are being forged it is important for India to develop closer ties with countries in and around Afghanistan to ensure that forces inimical to India's interests do not gain influence in Afghanistan. Turkmenistan, Tajikistan, Uzbekistan and Iran are important neighbours of Afghanistan with whom India enjoys friendly relations. Turkmenistan has friendly ties with both Iran and Afghanistan. Turkmenistan in past has played an active role in mediating a settlement in Afghanistan and resolving the problem in Tajikistan. It managed its relations with the Taliban regime by establishing economic relations with them and providing them with gas and oil.42 In the current situation, Turkmen president has proposed five initiatives43 for an Afghan settlement. Firstly, Ashgabat is ready to host the UN-sponsored international high-level meeting to address the Afghan problem and develop effective institutions of state power given the neutral status of Turkmenistan.44 Also offered is assistance in training Afghan specialists in Turkmenistan, under the UN patronage and programs, of the Afghan personnel for management structures in various sectors. Thirdly, assistance is offered to Afghanistan in developing a transport infrastructure. It plans to construct a new railway on its territory along the Afghan border. This can further be extended into Afghanistan to facilitate the country's regional and inter-regional cooperation.45 Fourthly, there has been talks about the need for urgently building the TAPI pipeline which would have significant impact on the economic development of Afghanistan. Finally, it was conveyed that Turkmenistan is ready to consider the matter of increasing the electricity power supply to Afghanistan, as well as expanding its own energy infrastructure for the purpose of future installation and networking on the Afghan territory. For this Turkmenistan invites the international community represented by the UN to discuss this project. On this issue of crucial importance both Indian and Turkmen views are congruent.46

### The Cultural Connect

Yoga continues to be one of the most powerful links for boosting India's bilateral cultural relations with Turkmenistan. The 4th International Day of Yoga was celebrated at the Yoga & Traditional Centre at Bagtyarlyk Sports Complex in Ashgabat on 17 June 2018 with full enthusiasm. Besides 700 regular Yoga practitioners, members of the Diplomatic Community,

Indian Community & students of State Medical University participated in the event. Deputy Minister of Healthcare & Industry of Turkmenistan had graced the occasion on 2018. Of the 2800 registered Yoga practitioners about 2100 are practising Yoga on weekly basis. The two credit course of 'Yoga Therapy' continues to be held at the State Medical University with the help of Indian Yoga teachers.

Gandhi Jayanthi was celebrated with garlanding and laying of flowers on the bust of Mahatma Gandhi located in the Yoga & Traditional Medicine Centre in Ashgabat. A quiz program, a photo exhibition and two documentaries on Mahatma Gandhi were screened in the Embassy premises where 30 students learning Hindi at Azadi Institute of World Languages participated enthusiastically. A video on Mahatma Gandhi and the recordings of 'Vaishnav Jan to......' were displayed on the façade of the chancery building.

Ekta Diwas was celebrated on 31 October 2018 with Ambassador administering the National Unity pledge. Later floral tributes were paid to Sardar Patel. The ceremony was concluded with screening of a documentary depicting the life and accomplishments of Sardar Patel.

India was invited to join the 'Ashgabat Agreement' which envisages establishment of an International Transport and Transit Corridor between the Governments of Iran, Oman, Turkmenistan and Uzbekistan. India has been admitted to 'Ashgabat Agreement' w.e.f. 3 February 2018 on the Establishment of an International Transport and Transit Corridor with the consent of the Member countries.

The current initiatives taken by the governments of India and Turkmenistan can be sustained only if the government and the private take advantage of opportunities which are opening up not only in energy sector but also in non-energy sector, to make economic engagement mutually beneficial for both the countries. India will have to give more importance to educational and cultural engagement with Turkmenistan. While there exist formal agreements for cooperation between the Indian and Turkmen institutes but there has been very little follow up.

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# DOI NUMBER: 10.5958/2249-7137.2020.00006.3 LANGUAGE PICTURE OF CHILDREN'S WORLD ILLUSTRATED IN "DIVANU LUGAT-IT TURK"

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### ABSTRACT

This article explores the language picture of the World and its varieties, the role of children's world picture and the features of its study. Also, special attention is paid to the Turkic children's worldview of the 11th century, set forth in the famous "Divan" by Mahmoud Kashgary. Some comments are given on the analysis of the concept of "children's world picture". From this stage, the child's own language picture begins to wane, that is, at first the imaginary, mythological, sentimental concepts and related frames leave the child's thinking and gradually take over the world. Hence, the linguocultural and linguocognitive features of LPCHW presented in "Divanu Lugat-it Turk" require a special research to summarize data within linguocultural concepts and identify key parameters and components. We have tried to focus onlyon some of the features of this issue in our research. At the same time, linguistics is closely related to the generally accepted language and thinking, and the parameters such as age, gender, beliefs, education, knowledge and understanding of the world are exactly the "national consciousness" in the formation of LPW. This process involves theimportant factors as "national thinking", "national idea", "national culture", "national mentality" and "national character". One issue that plays an important role in shaping the LPW in the child's language and thinking is the problem of "monolingualism and multilingualism" in the family or community. It is well known that in the 11th century Turkic peoples spoke a monolanguage in the family and in the community (except for the cities of Turkic-Sogdian bilingualism).

**KEYWORDS:** Language Picture of the World, children's world picture, child's language, "Divanu Lugat-it Turk".

## INTRODUCTION

In terms of the ways of learning and mastering the world there are different types and forms of the world represented by the language. There are several types of "world image" in the scientific literature, depending on the way a person perceives and reflects on human existence: 1) *idealistic, materialistic and dualistic; 2) scientific, non-philosophical and philosophical; 3) natural and humanitarian (science)*scenarios of the world. From the point of view of generalizability, there are *general, fundamental, private* and *specific*images of the world and according to the method of knowledge there are *mythological, religious, scientific* and *philosophical* views (1; 448).

The view which in linguistic studies is called as *language picture of the world*(LPW). It is beyond the ordinary and scientific landscape of the world, and its essence can be explained by linguiocognitive and linguiodidactive approaches. Conclusions in LPW all scientific researches on linguoculturology and linguocognitology, as Professor Nizomiddin Makhmudov rightly points out, are based on F. Humbold's linguistic-anthropological philosophy: "Thinking does not dependent only onlanguage, to a certain extent, it is a separate language"; It is clearly expressed in the words" and "the feature of a nation is more easily understood by its language than by its ethics, habits and behavior" (2; 57).

At the same time, linguistics is closely related to the generally accepted language and thinking, and the parameters such as age, gender, beliefs, education, knowledge and understanding of the world are exactly the "national consciousness" in the formation of LPW. This process involves theimportant factors as "national thinking", "national idea", "national culture", "national mentality" and "national character". That is, when studying the types of LPW, in each particular case, it is necessary to consider the principle of "language within human and the human within language" and anthropocentric paradigm because they involve not only cognitive linguistics but also linguoculturology (2; 59). ).

From the linguistic point of view, there are the following forms of LPW:

1. *The usual (typical)language picture of the world.* A universe based on the perception, understanding and worldview of the human community or person (socium), a systematic understanding of knowledge of the Earth and the universe, the objective and subjective universe, the meaning of life, and the role of man in this complex reality. ). (3; 937)

2. *The scientific picture of the world*. The scientific picture of the world (SPW) is shaped by the process of realizing the world scientifically and this is the main difference that varies from the usual perception of reality (4; 14).

3. *The direct picture of the world*(DPW). The direct picture of the world is based on direct perception of the environment by individual or social consciousness. This perception and knowledge is made by the human senses and through abstract reflection.

4. *The indirect picture of the world*(IPW). The indirect picture of the world can be described as a cognitive picture that reflects an LPW in reflection and provides an external image by means of secondary character systems. (5; 34) The indirect image of the world is expressed in a work of art by writers, poets and other creators, by which the artist "delves" the image of a particular reality, events, landscape, inner world, emotions (6; 310), and the reader begins to assimilate and revive the world as the product of the thought and imagination by the creator.

5.*Thelanguage picture of children's world*. Among the types of LPWs the language picture of children's world (LPCHW) plays a special role. All of the mentioned LPWs are produced by physically and mentally mature, well-experienced, knowledgable and skillful adults that are typical of the thought and language of them.

Children have their own notions of the world, their pure and clear ideas do not always coincide with the realities of life. Children are often in the imaginary world of their own creation, their imagination of the outside world and this sytem is a fruit of puzzled thinking, but their impressions of fairy tales and cartoons live in the minds of the real world. To admit this, just remember the world of the child in the story of Ch.Aytmatov's "White Ship" or the pictures of Hashimjon in H. Tukhtabaev's "Riding the Yellow Devil". The Boy in "White Ship" lives in two fairy tales he has invented, and the protagonist of "Riding the Yellow Devil" would hope to achieve his dreams without reading and learning, as if he were a magician in fairy tales. He expects this help from the "magic cap". Any child has a half mythological, semi-mystical and imaginary world in his/her heart, and the language picture of the world withinchild-like LPW.

Children are considered to have a particular type of a language. The LPW, sealed in children's language, is unique in their thinking and the perception of the world.

It is widely accepted in the sources that primary and primitive LPWis formed in children's thinking at the age of three. This LPCHW is available until the age of seven or eight, or that is, until the child learns to read and receive independent learning. From this stage, the child's own language picture begins to wane, that is, at first the imaginary, mythological, sentimental concepts and related frames leave the child's thinking and gradually take over the world. The child begins to understand the semantics, underlying meanings and stylistic features of language units, with the effect of the family and language community being active, and the child begins to absorb a range of new things from adults speech (7, 8-11).

The linguistic picture of children's world is fundamentally different from other types of LPWs, and it is important to pay close attention to these differences. The formation of a child's LPW is similar to the way that he or she masters the outside world through fairy tales, games, readings, learning, hearing, seeing, imitating and repeating itself.

The study of the language concepts of the world, which we have analyzed in the book "Devanu lugat-it Turk" (DLT), which covers LPW in every aspect of the social life of the Turkic peoples in the 11th century, is also important. Different stages of children's life can be birth, growth, speech, cradle life, walking; mother and child, father and child, children and adults, children's games and many words on toys, toys and fairy tales, child rearing, methods and tools. According to Turkish researchers Zekerya Batur (Batur Zekerya) and Merve Beshtash (Beştaş Merve) 145 wordsout of 8000 in "Devan" illustrate children's world, their growth, education process and teaching (8, 247-262).

To describe the concept of "child" in Devan, gänč (DLT, 473), oğul (DLT, 42), ikkizoğlan (DLT, 71), oğla (DLT, 134), qïz (DLT, 134), soŋ(DLT, 444), ton(DLT, 370), bala(DLT, 403), čočuq (DLT, 153) are used. In this row the word "bala" is interpretedas "bird and animal's children"; "čočuq""swine and little of all creatures" (DLT, 153). The word "Oğul"is also used for both boys and girls. For the baby the doubled-used word *čar-čarmaq*is used(char-charmaq,DLT, 373).

The word *gänč* (ganch, DLT, 473) in the "Devanu lugat-it Turk" has been described as "child" (*"gänč anasin emdi"*), which is found in various extracts of the work (DLT, 80) *"gänč anasin emisädi"* ("the child wants to suck his mother"DLT, 117),"*"gänčsüt sordi"*("the baby sucked", DLT, 386), *"ol gänčin beladi"*("she puts her baby into the cradle" DLT, 416) and all these expressions could give the meaning of "baby who cannot feed himself/herself".

In the "Devanu lugat-it Turk" the word "*tuğdī*" (DLT, 212) is used for giving birth to a child: "*Oğul tuğdī*" - a son was born. The work also contains lexemes directly related "to give birth or to be born" such as "*qurtul*"(DLT,279)and "*yen*,*yin*" (DLT,354). The word "*töl*" (fill, 368) is also used, which means "calving time, season".

In "Devanu lugat-it Turk" the word "qap" (DLT, 373) is used to mean "child's companion in the womb". According to the poetic description given by Koshgari the word means "a bag of a child in the womb". When a child is born with this veil, it is divulged as a blessing, a child is considered to be a noble child and called the "qapliğ oğul" (DLT, 373). It also refers to the word "umay" (DLT, 62), which is close to the meaning "something that falls from the womb after a woman gives a birth. It is pointed as "the child's companion in the womb".

It is well known that the child's communication with the mother since birth is a cradle. In "Devan" it is often used to refer to the concept of the cradle. Note: "*bešik*"– cradle (DLT, 163); "*oğlan beleldi*"– boy is cradled (DLT, 416); "*ol gänçin beladi*" – she cradled her child (DLT, 391); "*üğrük*"–shaking the cradle (DLT, 53); "*urağut bešik ügridi*"– the woman shook the cradle (DLT, 115); "*ol angar bešik ügrišti*"–he helped her to shake the cradle (DLT, 103); "*ol angar bešik ügrišti*"–he has the cradle shaken(DLT, 107,111); "*oğul bešiktin yorildi*" – the child was taken out of the cradle (DLT, 387); In "Devan" stated that the name of the linguistic and cultural tradition of singing before sleep, which still exists today as a folklore, is "*balu-balu*" (DLT, 403).

Physical, physiological, and psychological development of the child is a natural process of growth and development. That is why at each stage a child learns new words, deities, games and habits, weeps, scolds, makes noise, plays games, interacts with other children, hurts, cures and so on. The following world-specific words in the "Devanu lugat-it Turk" are called mother-child concepts: "emdi" (suck, DLT, 82), "emüzdi" (she feeds her, DLT, 85), "sut sorutti" (breastfeeding, DLT, 303), "sut sordī" (asked for milk, DLT, 386). "iğladī" (wept, DLT, 119), "čarlaštī" (shouted, DLT, 271), "sigtadī"(insisted, DLT, 418), "çarladī" (called, DLT, 424), "yigladī"(cried, DLT, 428), "banğ"(wept loudly, DLT, 443) means that the child is crying in different situations. When referring to the mother's breastfeeding in all sections of the "Devan", Mahmoud Kashgarydid not mention the use of "breastfeeding" component on mammals like humans. In any case, it seems that in the old days the practice of nursing animals was not used. These traces can also be seen in the use of the word "avizlandi" for beefs in suckling process.

Following to the concept of "cradle", the frames that represent the evolution of the child's growth have been investigated in this research: "oğlan itildi" – "child began to crawl" (DLT, 90); The words "oğlan tišlandi"–"baby's tooth appeared" (DLT, 282) can be seen to refer to the child's concept of "to crawl" and "tooth". In addition to this, child's growth, nurture andweighth are regarded by language units such as "tigrešti", "tikradi"– the baby is trying, growing(DLT, 419), "itildi" – "crawled" (DLT, 90), "etländi"– weighted (DLT, 109), "etikdi" - mature, grown (DLT, 89), "ulğatti" – grown (DLT, 112), "ersindi" - adult (DLT, 108), "üni qoŋradī" –his

voice was trembled (DLT, 461), "bedüttü" - brought up (DLT, 302), "bedüdü" – grew up (DLT, 413), "sünğüklandi" – cornea enlarged (DLT, 462). In the following units, Mahmoud Kashgary illustrates the complete development of the boy's transition to masculinity: "oğlan erätti" - the boy grew up and married (DLT, 419); "oğlan yarbatti" - the boy put his feet on the ground (DLT, 418); "oğlan teytildi" - the child was triggered and alerted (DLT, 244).

The period when boys turned to be disobidient to their parents was described with these statements: "oğlan quturdı" – the boy became rebellious (DLT, 274), "oğlan isizlendi" – the boy became stupid (DLT, 121), "oğul yuwğalandı" – the boy was pampered (DLT, 393), "oğlan yuwğatti" – the boy became stubborn (DLT, 419); "oğlan enğrešdi" – the boy became abusive, "oğul ataka üznedi" – the boy was rude to his father(DLT, 120), "esizländi" – child was abusive(DLT, 121). At the same time in "Devan" are given some phrases to illustrate when the boys were told off by their parents: "igdildi" – the boy was treated(DLT, 106), "er oğliŋa qawdundi" – father excused his son (DLT, 284), "ol oğlincibirtti" - father beat his son with a wet rod, a branch (DLT, 470), "ol oğlin tutuqladi" – he beat his son (DLT, 436), "ol oğlin qulaqladi" – father hit his son's ear (DLT, 437), "ol oğlin köcüklädi" – father hit his son's back (DLT, 438).

Among the lexemes given in "Devan" there are noteworthy concepts that distinguish children by age, family sequence, and social status. Specifically, to describe any little boy used the term "*ušaq oğlan*"(DLT,40), for both elder son or daughter *ton oğul* (ton, DLT,370), for a little child "*aštal oğul*" (ashtal oʻgʻul, DLT, 55),for twins "*ikkiz oğul*"(ikkiz oʻgʻlan, DLT, 71).To represent stepchildren and adoptive children of the family, the combinations of*ögäy oğul, ögäy qiz* (DLT, 62) and in addition , "*paldür oğul, paldür qız*"(DLT, 181) were also used. Moreover to describe a step son consumed different words as *qaŋsïq* (DLT,453), *tutunču* (DLT,450), *tutunču oğul, yuwğa* (DLT, 334).According to the time of children's birth, their nature and character a child who was born in summer qualified as *körpä oğul*(blanket son)(DLT, 167), hyperactive childrenas *ïsïz* (DLT, 62), fractious children as *köwezlik*(DLT, 200).

It is worth to pay attention to the examples of the words used by ancient Turks in "Devan" to call, cherish, encourage and praise children. "*Ulič*" (ulich, DLT, 35)is a lovelyword word used by parents to their children and its form *uličim*used that means my lovely son. A young clever girl who, despite her age,treated others as mothercould be referred as "anač" (anach, DLT, 35), the boy who pretended himself as an aged person called as *atač oğul* (atach oʻgʻul, DLT, 35)and a young girl with her extraordinary sensitivity or kindness who could reflect others was treated as "*egač*" (egach, DLT, 35). They used the words *kötič*" (koʻtich, DLT, 145), "*yuduğ*"(yudugʻ, DLT, 327) and "*yiŋdägü*" (yingdagu, DLT, 455) to describe the feelings to reprimand their children.

One issue that plays an important role in shaping the LPW in the child's language and thinking is the problem of "monolingualism and multilingualism" in the family or community. It is well known that in the 11th century Turkic peoples spoke a monolanguage in the family and in the community (except for the cities of Turkic-Sogdian bilingualism). According to science, children begin to speak earlierin one-language families or societies rathan while in the bilingual environment they start speaking later (9). To enhance the speakills of their children, parents start to ues the childish words (as *nanna, umma, ashsha...*).

It is well known that the majority of Turkic peoples observed by Mahmoud Kashgari were monolingual and for this reason there are short of childish words in his "Devan". He pointed out some of the examples on such kind of phrases as well and they are *ebmäk*, *etmäk* (bread, DLT, 53),"*ebäk*"(nanna, DLT, 40), and the mothers imitated*čiš-čiš* (DLT, 136) to make their children urinate . Alternatively, "*čürkü*"(DLT, 171) and *bütkü* (DLT, 171) were also used to feel urinate free and the parents concumed the phrases*čürkü barmu*? or*bütkü barmu*?to their children(DLT, 171).

Thus, the process of language teaching, educating and bringing up childrenis directly related to the formation of LPW in the infant's mind, and everything occurs in the social matrix including society and family.

Games for infants and children are important tools for learning languages and shaping the world. During the course of the game the child's personality begins to form as a subject. For this reason, the gamesinstructed for infants and little children attracted the attention of renowned scholars, educators, psychologists, philosophers, sociologists, ethnographers and cultural figures. Scientists say that the more children play, the better they can show their qualities at school during their study. Games content serves as a bridge that directly connects the content of the social being to the individual (10).

Children are taught through the game the most important social process –labor. From the earliest stages of human development, a tool for children to work and being with matures have been developed. As a result of the emergence of toys the role-playing games also appeared. Certainly, the idea and aspirations of the need to instill a child's desire to work through adult labor strenthens the idea of hard-working in children. After all, it is possible to teach children to play socially useful work through the play, and to create in their mind a "creative" paradigm and to instill high human qualities. During the game, children's all personality, interests and environment are clearly reflected.

The articles in "Devan" by Mahmoud Kashgari also contain the information about children, their games and toys in the 11th century Turkic societies. First of all, we analyse the game tools of the 11th century Turkic peoples. According to Mahmoud Kashgari, the word "oxšağu"(similar, DLT, 69) is the common name of the toys.Because all toys represent the small models of the items. The author pointed out the model of humanbeing in dolls and to represent them used the word " $qo\delta určuq$ " (kudurchuk, DLT,198). "*Tepük*" (tepuk, DLT, 155) – a toy for boys that could be made by melting the lead,forming it in the shape of the wheels or rolls. Then the children play with a string of goats' hair gluing it into the ready wheel or roll and played it with kicking. Next toy is "top" (DLT, 363) – ball. This is an abbreviation of topïq(DLT, 153), it is a type of a ball played with rider."Bandal" (DLT, 191) – The head of the stick is made of tough wood. The boys burned it at night and played to point to each other. This is called "a horse bandal" played in the game Chovgan. Nuts and stoneswere also used as toys in some children's games and "etic," (etich, DLT, 35) was a hole where children could throw their nuts.

As games play an integral part of children's imagination and real world there are a range games to play for them. In "Devan" different types of games as "*ötüš*" (DLT, 38), "*tepük*"(DLT, 155), *qarağuni* (DLT, 407), "*möŋüz-möŋüz*" (DLT, 446), "*çaŋli maŋgli*"(DLT, 452), "*köčürmä oyun*" (194) are given.

Thus, in "Devan" information about games, their integral part in children's up-bringing could be clearly illustrated in terms of children's language world picture in the 11th century.

The articles and proverbs in "Devanu lugat-it Turk" about children, their upbringing, the ethics and morality are also valuable concepts that help characterize the character traits of children in the 11th century. The book contains a number of proverbs and sayings related to the concepts of "child", "education", "manners" and "learning":

"Oğlum öğüt algıl, biligsizliğ kitär talqan kiming bolsa, aŋar bekmäs qatar" (DLT, 175) – It means "my son, listen to my advice, quit ignorance, as knowledge brings only goodness for man and never stop learning".

"Algıl ögüt mendin oğul erdäm tilä, Boyda uluğ bilgä bolup bilgiŋ ülä" (DLT, 34) –It gives the idea as "My son, learn from me, wish for excellence, become a great scientist, spread your knowledge, knowledge acquired at a young age is only worth when it is spent on public services".

*"Ulugluquğ bulsa-sen eδgü qïlïn, Bolğïlkišig beglär qatın yaxšı ulan"*(DLT, 39) – If you find a rank and a career, make your behavior good, be good to the rulers, and accept the positive side of the people".

*"Kelsä kiši atma aŋar örtär külä, baqqïl aŋar eδgülügün ağzïn külä"* (DLT, 65) –When a person comes with a smile, treat him well. Don't be rude for people.

*"Erdäm tile ögränäbän bolma küwäz, erdämsizin ögünsä eŋmägüδä aŋar"* (DLT, 108) –A person who prides himself on knowledge and wisdom, in reality he does not learn anything except arrogance. The work of an uneducated and boastful man is in vain.

*"Eštip ata anaŋnïŋ sawlarïnï kadïrma, näŋ qop bulup küwäzlik qïlnïp yana quturma"* (DLT, 200) –Listen to your parents' words, do not refuse, do not be foolish when you find wealth.

"Oğlum saŋä qoður-men erdäm öğüt xumaru,bilgä erig bolup sen baqqïl anïŋ taparu" (DLT, 474) –My son, I will leave you good manners.If you meet educated, intelligent people, be close to them and learn from them.

"*Oğlaq yiliksiz, oğlan biligsiz*" (DLT, 60) – Goat's kid does not have bone marrow, young child does not have life experience and knowledge.

"*Tay atatsa at tïnur, oğul eredhse ata tïnur*" (DLT, 94) – If the son grows up, the father will have a rest; it means that a clever boy replaces his father and helps him.

"Oğlan biligsiz" (DLT, 155) – referring to the inexperience and lack of knowledge of the child.

*"Oğlan suw töker, uluğ yanı sönur"* (DLT, 214) – The boy pours water and the adult's foot is broken; the parent is responsible for the child's actions and mistakes.

*"Ata oğlī ataç toğar"* (DLT, 231) – A father should draw his attention to his child's behaviour. Father can determine his child's fate.

"Atası, anası açiğ almila yesä, oğli, qizi tiši qamar" (DLT, 417) – Children feel excuse for their parents' mistakes and faults. This proverb also has the following option: "Atası ačığ almila yesä, oğliniŋ tiši qamar.

"Oğlan iši iš bolmas, oğlaq mönzi sap bolmas" (DLT, 372)-The child's work doesn't have quality.

*"Anasïtewlüg yuwqa yapar, oğlï tetigqoša qapar"* (DLT, 334) – If the mother is canny, her child can be even more wily than his/her parents.

"Muš oğlı muyaw toğar" (DLT, 213) – The behavior of the child is the resemble of his/her parents.

These aphorisms, proverbs and phrases express how metaphorical, metonymical and allegorical formulas represent the concepts associated with a child regarding the 11th century.

Hence, the linguocultural and linguocognitive features of LPCHW presented in "Divanu Lugat-it Turk" require a special research to summarize data within linguocultural concepts and identify key parameters and components. We have tried to focus onlyon some of the features of this issue in our research.

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# STUDY OF SLOWDOWN IN INDIAN AUTOMOBILE INDUSTRY AS AN OPPORTUNITY FOR DEVELOPMENT AND PROGRESS

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### ABSTRACT

India's automotive industry is in a changing phase and is observing five megatrends that are expected to renovate the industry. Customer needs, the disruptive impact of technology, the dynamic regulatory environment, changing mobility patterns and global interconnectedness are all closely associated with each other. The industry has never observed this kind of change during the slowdown process of the market. This paper explains the sales of various Automobile companies in India and its new megatrends that can increase the sales in future.

### KEYWORDS: Customer, Industry, sales and Market

### **INTRODUCTION**

India's automobile industry is one of the largest in the world. It has seen very high growth rates during the last three decades. Up to the year 1975 or so, India was having 3 or 4 manufacturers of cars, scooters and commercial vehicles. Hindustan motors, Premier Automobiles and Standard motors were producing cars. The famous makes for two wheelers were Vespa and Lambretta. The commercial vehicles were manufactured by Tata motors and Ashok Leyland. Automobile industry has experienced very high growth rates during the last three decades. The order of the growth rates was from 9 to 18% depending on the type of vehicle(1). For example, the average growth of two wheelers was about 10%, whereas the passenger vehicles grew at 13 to 18%. At present India is third largest country in production of motorized vehicles. Almost all international

automobiles companies like: Suzuki, Honda, Hyundai, Ford, Toyota, Volvo, etc. have setup their plants in India. The present level of turnover of various types of vehicles put together comes to 38.3 billion USD which is nearly 8% of India's GDP. Employment wise, this sector employs 19 million people. The accelerated growth of the automobile sector has benefitted the Indian economy by creating enormous employment opportunities. Side by side, this sector has also created enormous pressure on environment that resulted in air pollution and global warming. Air pollution causes many health problems like: respiratory and cardiovascular diseases.

According to World Health Organization (WHO) report, on an average half a million deaths are caused by air pollution in India every year. For many years, air quality of many Indian cities has failed to meet WHO guidelines for safe levels. The levels of PM2.5 and PM10 (Air-borne particles smaller than 2.5 micrometers in diameter and 10 micrometers in diameter) also the concentration of dangerous carcinogenic substances like Sulphur Dioxide (SO2) and Nitrogen Dioxide (NO2) have reached alarming proportions(2).

According to WHO, among the world's 20 top polluted cities in the world, 13 are in India and Delhi tops the list. The growth in the production of the automobiles has also increased the emission of carbon Dioxide (CO2) and hydrocarbons (HC) which in turn increased global warming and caused climate change(3). Climate change is a big issue which is being coordinated at the level of United Nation. Paris agreement has been signed in this regard in 2016 by all the members of United Nations. The government of India took steps to tackle air pollution problem by introducing Bharat stage emission Standards (BS) for vehicles in 2000. The norms were further tightened in 2005 and 2010(4). BS IV norms will be applicable to all vehicles throughout India in 2017. The government has also decided to adopt BS VI norms from the current BS IV for all the vehicles by 2020. BS V norms will be bypassed.

The Indian automobile industry is best segmented as follows:

- □ Medium and Heavy commercial vehicles (M/HCV)
- □ Light commercial vehicles (LCV)
- □ Light utility vehicles (LUV)
- □ Passenger cars
- □ Two-wheelers

India is one of the limited markets where small car section growth is as solid as the growth in the superior and luxury car segment. Even passenger car sales in rural areas have been growing while the share of urban areas has been declining.

There are lots of options for transport like motorcycles, cars, SUV, etc for everyone. There are many automobile manufacturers in two wheelers & four wheelers segments. Few major automobile companies are Bajaj, Hero MotoCorp, Maruti Suzuki, Mahindra & Mahindra, Hyundai, Tata Motors, TVS, and Chevrolet etc.

### **OBJECTIVE OF STUDY**

The main objective of this paper is to understand the reasons of slowdown and study the scope of development and progress in the sales of Automobile Industry.

### **REVIEW OF LITERATURE**

According to M. Krishnaveni, et.al (2015) explained that production and exports trends of the automobile in India has been rising year by year. The rise in demand and increase in the inflows through 100% FDI has contributed to the rise in the production and exports of the automobiles in India [5].

Dr. Alpana Roy (2016) explained that the increase in transport sector has contributed to the climate changes in major cities across the world. The author has taken Delhi and Kolkata as the location for study to show how the increase in the growth of vehicles is correlated with the increase in the average mean temperature in the city [6] [7].

Shrivastava R. K, et.al (2013) explained that rapid urbanization and growth of motor vehicles has serious effect on environment and human life. Most of the cities in South Asia including India are suffering from the high air pollution. The pollutants like CO, SO2, NO2, PM, etc. mainly comes from the emissions of the transport sector [8].

Mr. Ashish Jain, Sales Professional (2013) said, "Automobile companies should focus on uncovered area (Such as Rural Area because of increasing disposable income) and to do New R&D in Engine development which give more millage, which is the need of consumer. By doing this, they can reduce their promotional expense and increase production and they can also control on cost and offer good pricing of their product and attract more consumers"

Suice multiples in mature material						
OEM's	August2019	August2018	% Change			
Passenger Vehicle						
Maruti Suzuki	95506	147700	-34.53			
Hyundai India	38205	45801	-16.58			
Mahindra & Mahindra	13507	19758	-32			
Toyota	10701	14100	-24			
Tata Motors	7316	17351	-58			
Honda Cars India	8291	17020	-51.28			
MG Motor	2018		NA			
Commercial Vehicle						
Tata Motors	21824	38859	-45			
Mahindra & Mahindra	14684	20326	-28			
VECV	3538	6069	-41.7			
Two Wheeler						
Hero MotoCorp	543406	685047	-20			
Bajaj Aut <u>o</u>	205470	237511	-13			
MG Motor Commercial Vehicle Tata Motors Mahindra & Mahindra VECV Two Wheeler Hero MotoCorp Bajaj Auto	2018 21824 14684 3538 543406 205470	38859 20326 6069 685047 237511	NA -45 -28 -41.7 -20 -13			

Sales Analysis in Indian Automobile Industry

ET Auto Updated: September 02, 2019, 13:17 IST

fictual cupacity and fictuation by 2010 19					
Segment	Capacity in No	Production in No			
Passenger Vehicles	9,372,838	6,909,797			
Commercial Vehicles	2,397,257	1,741,122			
Two Wheelers	1,746,596	1,416,457			
Four Wheelers	31,483,904	25,019,509			

### Actual Capacity and Production by 2018-19

South Asian Academic Research Journals http://www.saarj.com Source: Report of the Working Group on Automotive Sector for the 12th Five Year Plan (2012-2017)

Categories	December 2018	January 2019	MoM Change (%)
Two Wheeler	11,41,209	11,89,679	4.25%
Three Wheeler	45,008	50,344	11.86%
Commercial Vehicle	53,712	53,732	0.04%
Passenger Vehicle	2,02,585	2,71,393	33.97%
Total	14,42,514	15,65,150	8.50%

### A Chart with comparisons can be found below:

### Source: F A D A Research

Based on the sales report filed by the automakers, ETAuto estimates that the overall industry declined by 25.6 percent (approx) in September 2019.

### **Reasons for the Sales Declination in Automobile Segment**

### 1) Confusion around BS6 emission standards

Bharat Stage 6, more commonly referred to as BS6, is a standard of emission norms set by the government of India. These norms apply to both fuel and the engine. Currently, BS4 emission norms are in effect and all car models sold today are compliant with it. The BS6 compliant engines would be less polluting in terms of the gases and particulate matter emitted from them.

By April 2020, the BS6 emission norms will come into effect and all car manufacturers will have to upgrade their engine offerings accordingly.

2) Petrol and Diesel prices have reached the sky which is not affordable for a common man

3) Waiting for attractive deals closer to BS6 implementation

Dealers and carmakers are expected to be scrambling to get rid of new car inventory with BS4 engines while they can still get registered. In that rush, buyers are likely to be offered ridiculous discounts to get those models off their hands.

A similar situation already happened in 2017 when the sale of BS3 vehicles was banned. Certain manufacturers, particularly from the two-wheeler industry, were still hoping for an extension on the deadline for the sale of BS3 models. However, when the decision and date were finalised, manufacturers offered great discounts to get rid of their BS3 inventory.

### 4) The UBER-OLA Factor

Taxis have been around for many decades. However, they were always quite expensive, hard to find and taxi drivers were infamous for their unreliable services. Today, thanks to the boon of the smartphone and cheap internet, we have convenient cab services from apps like Uber and Ola.

In fact, in the last year or so, these two apps have gone beyond just booking a cab; they even allow you to book auto rickshaws and motorbikes for shorter distances. With the added convenience of online fare payments, the use of these apps for smaller commutes seems a more favorable prospect than buying your own car and the hassles that come with it.

### 5) Big Cities Are Too Crowded

Speaking of the hassles of owning a car, the first one to mind is that of being stuck in traffic. A large volume of car sales is driven by young, upcoming professionals with growing incomes and fewer liabilities. But even if you have the money to buy a car, you will likely spend a lot of your time driving it in congested traffic and/ or looking for a suitable parking space.

6) Too many back-to-back changes in the industry

When there is too much going on in terms of changes and uncertainties regarding regulations and government policy

### 7) The Electrification Equation

Even the government's rhetoric surrounding electric mobility and electric vehicles leaves many uncertainties for both carmaker and buyers about what to invest in and more critically, when to invest.

Affordable EVs with sufficient range are a must for the electric mobility shift to become reality.

Recently, the government has reduced GST rates for EVs in India.

8) Heavy Taxes and Duties on vehicles

9) Unavailability of Parking Space is big problem

### SWOT Analysis of Indian Automobile Segment:

### Strength

1) Cost Advantage

India has an advantage of Low Labor cost as compared to western countries.

Indian manufacturers spend 3-15 per cent of sales on labour cost whereas global companies spend 20-40 percent.

According to industry estimates the cost of automobile design in Europe ranges as high as \$ 800 per hour, and even higher in the US, costs are as low as \$ 60 per hour in India for equivalent quality. Following table shows the cost and skills comparative advantage :

US \$ per month	India	China	Indias Advantage (% Difference)
Middle Management(> 5 Years)	1400	2500	-44 %
Supervisor (5 years)	300	800	-63%
Skilled Worker (1 year)	61	125	-51%
Skilled Worker	42	65	-35%

TABLE: COST AND SKILL COMPARATIVE ADVANTAGE

Source: ICRA analysis

2) Availability of skilled manpower

Indian's are born with certain talent and skills the manufacturers in Automobile Industry utilize this talent for the development which leads to an advantage in cost reduction.

**3**) Availability of Engineers

- 4) Quality Conscious manufacturers
- 5) Literate customers
- 6) Change in life style and adoption of modernization

### Weakness

- 1) Lack of research and development
- 2) Lack of stable Government Policies
- 3) Lower International credit ratings
- 4) Complex and Heavy Taxes
- 5) Higher Interest Rates
- 6) Poor Infrastructure
- 7) Rigidity in Labor Laws

### **Opportunities**

- 1) Growing Service Sector
- 2) Globalization and Increase in Foreign Direct Investments
- 3) Introduction of New Models

### Threat

- 1) Fast Change in technology
- 2) Rapid change in Life style and demand
- 3) Change in Customer Requirement
- 4) Customer Dissatisfaction

Considering the SWOT analysis still here are many developments and changes to take place in the automobile industry. The Future technologies that may boost the market. Introduction of E-Vehicles can be a solution for the price hikes of Petrol and diesel, Environment friendly, no pollution, speed control, road accidents can also be reduced. The customer demand, changes required in the supply will help the manufacturers to make the relevant changes and help in improving the sales.

### CONCLUSION

Considering all the facts and SWOT analysis it is found that besides of slowdown in Indian Automobile Industry instead of demotivating and under estimating the market it can considered as an opportunity for development and progress because of many changes in the country and specially studying the Maharashtra State. Literacy rate of the people in society has increased by 15%. Awareness amongst the people regarding the eco-friendly products in Vehicle BS6 compliant engines, E-Vehicles, Political changes in new Government, Revision of Taxes and Basically the need and lifestyle of people. At least one vehicle in one family is not sufficient or not acceptable now multiple vehicles and comfort zone has expanded and is now the status

symbol in the society. All these factors can be considered for redevelopment and progress in Automobile Industry.

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# THE STUDY OF THE PREVALENCE OF ANOMALIES OF THE DENTITION IN THE BUKHARA REGION, THEIR EARLY DIAGNOSIS AND TREATMENT

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### ABSTRACT

The study of the prevalence of dentoalveolar anomalies and deformations, and the effectiveness of their treatment is an urgent problem, since it allows you to determine the need of the population for therapeutic and preventive orthodontic measures, calculate the necessary amount of orthodontic care, and determine the effectiveness of therapeutic and preventive measures (Sablina G.I, Kovtonyuk P.A., 2004). The exclusion of orthodontic care from dental care for children and adolescents and its transfer to the category of paid medical services has led to a sharp reduction in orthodontists working in children's dental institutions, and preventive work is not carried out among the children's team to prevent dentition. Over the past decades, many new methods and treatment tools have appeared in domestic orthodontics, allowing the orthodontist to carry out the necessary medical and preventive measures at the early stages of the formation of pathology. An algorithm will be developed for the treatment of patients with occlusion anomalies during the period of constant occlusion with the use of anthropometric measurements and an articulator at the final stage, which will increase the effectiveness of the treatment and achieve stable long-term results. A standardized examination of children with anomalies of the dentition will be carried out using the example of the Bukhara region. A comparison will be made of indicators of soft tissues of the oral cavity in children with abnormalities of the dentofacial system and a negative effect of occlusion pathology on the condition of the oral mucosa will be established.

**KEYWORDS:** Prevalence, Anomalies Of The Dentition, Early Diagnosis, Treatment.

### INTRODUCTION

It is known that violations in the development of the dentofacial system cause significant damage to human health and its adaptation in the social environment (Vami E.A. etal., 2010). Therefore, a healthy oral cavity, orthognathic bite, and aesthetic condition of the face are extremely important for every person and are of great importance. The exclusion of orthodontic care from dental care for children and adolescents and its transfer to the category of paid medical services has led to a sharp reduction in orthodontists working in children's dental institutions, and preventive work is not carried out among the children's team to prevent dentition. In the Republic of Kazakhstan, the development of orthodontics is closely connected with the opening of the dental faculty at KazNMU named after S.D. Asfendirova and the creation of the Republican and regional dental clinics (Sharipova S.K., Dzhumadillaev D.N., 2009). The first works on practical orthodontic care for children began to be published in the mid 60-ies of the twentieth century. A survey of the children's population in a number of regions of Kazakhstan for anomalies of the dentoalveolar system in preschool children revealed from 27.3% to 35.7%, in school children from 20.5% to 38.4%. The prevalence of dentoalveolar anomalies and deformations in various regions of Russia varies significantly. However, an analysis of the literature indicates that there is no tendency to decrease this indicator over the past decades, which confirms the relevance of the present study. The traditional methods of correcting AFA and deformations at the early stages of their development and at present have not lost their effectiveness, however, not in all clinical situations they allow achieving optimal results, both in terms of time and quality of treatment.

Over the past decades, many new methods and treatment tools have appeared in domestic orthodontics, allowing the orthodontist to carry out the necessary medical and preventive measures at the early stages of the formation of pathology. Terekhova T.N. [2013] presented the norms of functions during the formation of the bite, described possible violations, the influence of bad habits on the formation of the maxillofacial region. She indicated methods for eliminating bad habits and normalizing the functions of the dentofacial system, which contribute to the proper development of this system in children and preventing the development of persistent dentofacial anomalies and deformations [1.3].

In 90% of cases, supernumerary teeth cause various complications in the dentition, causing abnormalities, inflammatory and dystrophic changes in the surrounding tissues. The most frequently observed chronic inflammation of the mucous membrane in the area of the supernumerary tooth, periodontitis and resorption of the roots of adjacent teeth, follicular cysts, sometimes supernumerary teeth cause rhinitis, sinusitis, osteomyelitis. Quite often, supernumerary teeth cause speech and chewing difficulties, injure the lips, tongue, and oral mucosa [Semikopenko A.V., 2009; Feraru I.V. etal., 2011]. The most characteristic abnormalities in patients with supernumerary teeth are abnormalities of position, retention, false diastema and crowding of permanent teeth.

Anomalies of the bite occur due to uneven growth of the jaws, due to prolonged sucking of the nipples. Anomalies in the location of the teeth arise for constitutional reasons (small jaw sizes), due to injuries, with congenital disorders of the exchange of connective tissue, with tumors of the alveolar bone of the jaw[1.2]. Lack of teeth up to 1 year is extremely rarely associated with adentia. Check for the presence of dental primordia using a special method of radiovisiography

[Alimsky A.V., 2005; Avdeeva E.A. Evtukhov V.L., 2013; LübbersH.T., 2011; Ramos-JongeJ. etal., 2011]. Research Inoyatova A.Sh. et al. [2010] is devoted to the study of the influence of environmental factors on the formation of tooth roots in children. The authors indicate that if unfavorable environmental factors affect the process of embryogenesis of the maxillofacial region, this will also affect the timing and order of teething, as well as the formation of occlusion in children. However, studies to study the prevalence of anomalies of the dentofacial system, and on this basis, the development of appropriate early diagnosis and therapeutic measures in our republic were not conducted, which determined the need and relevance of studying this problem.

**Objective:** to study the prevalence of anomalies of the dentition, and on this basis, the development of appropriate early diagnosis and treatment measures.

A standardized examination of children with anomalies of the dentition will be carried out using the example of the Bukhara region. A comparison will be made of indicators of soft tissues of the oral cavity in children with abnormalities of the dentofacial system and a negative effect of occlusion pathology on the condition of the oral mucosa will be established. It will be established that bad habits affecting the state of the dentofacial system cause a high incidence of malocclusion in any age category. It is revealed that as a result of the negative influence of external etiological factors on the body, they contribute to the growth of anomalies of the dentition in children. The improved program for early diagnosis, comprehensive prevention and treatment of anomalies of the dentofacial system, as well as the provision of dental care for children in remote areas of the Bukhara region are scientifically substantiated. The results obtained in the course of this study will help to improve not only the diagnosis of disorders of the dentoalveolar system, but also with anomalies, but, and most importantly, the correct and rational choice of the method for correcting the revealed violations, as well as to prevent a possible relapse of the anomaly. An algorithm will be developed for the treatment of patients with occlusion anomalies during the period of constant occlusion with the use of anthropometric measurements and an articulator at the final stage, which will increase the effectiveness of the treatment and achieve stable long-term results. A correlation between the correct position of the dentition and the physiological location of the temporomandibular joint will be determined.

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## DEVELOPMENT AND EVALUATION OF THE EFFECTIVENESS OF THE DENTAL DENTAL EXAMINATION PROGRAM FOR CHILDREN WITH DIABETES IN ADVERSE ENVIRONMENTAL CONDITIONS

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### ABSTRACT

According to WHO, people with disabilities make up one tenth of the world's population. It is known that the incidence of childhood disability in developed countries is 250 cases per 10,000 children, and has a clear upward trend. According to the UNICEF American Foundation, nowadays every twentieth child has a particular category of disability. In other words, there are now about 93 million disabled children in the world. Disability in childhood is one of the serious problems of medicine. The practical work of a dentist with children with disabilities is associated with the expressed difficulties of conducting medical and preventive procedures. (N.V. Shovkun, A.V. Fomina). Today, the issue of prevention of various diseases in children with disabilities is especially relevant throughout the world. The quality of dental care, estimated by the index "level of dental care", was 9% for preschool children, 21% for schoolchildren, which corresponded to a poor and insufficient level of dental care. Indicators of congenital defects of the central nervous system are characterized by an increase and a combination of functional disorders. For the first time, a program of dental medical examination of children with various forms of diabetes will be developed and tested, to prove the high effectiveness of oral diseases in children suffering from diabetes. For the first time, data will be obtained on the effectiveness of the rehabilitation of the oral cavity of children suffering from diabetes. Currently, there is practically no information in the literature on large-scale programs of dental prophylaxis for children with disabilities. Dental morbidity of children, including persons with disabilities, remains one of the most acute and urgent problems in the CIS countries.

KEYWORDS: Dental Examination, Children with Diabetes, Childhood Disability

## INTRODUCTION

The problem of children's disability is a top priority throughout the world and in our country, in particular, according to N.V. Shovkun and A.V. Fomina, the number of children with disabilities in the Russian Federation has grown significantly over the period from 2009 to 2015. In 2009, their number was 515,000 people, and by 2015 increased to 605,000 hours N.A. Golikov and co-authors (2015), relying on official statistics, report that by 2012 among disabled children, about 170,000 did not study anywhere and only 100,000 children with disabilities attended secondary school. The high prevalence of childhood disability and its steady growth create great difficulties in the medical care of this contingent. The practical work of a dentist with children with disabilities is associated with the expressed difficulties of conducting medical and preventive procedures. (N.V. Shovkun, A.V. Fomina). Today, the issue of prevention of various diseases in children with disabilities is especially relevant throughout the world.

Currently, there is practically no information in the literature on large-scale programs of dental prophylaxis for children with disabilities. Dental morbidity of children, including persons with disabilities, remains one of the most acute and urgent problems in the CIS countries.

V.V. Korchagina, having examined children with defects of the central nervous system and musculoskeletal system, revealed a high prevalence of dental diseases: multiple malformations of hard tooth tissues, various dentition, anomalies, periodontal inflammation due to poor oral hygiene. The author points out the difficulties of diagnosis and treatment of dental pathology in this category of patients.

E.V. Mikhailova appreciated the organization of dental care for children with disabilities 2-18 years old. The prevalence of caries in preschool children was 87.5%, with an average intensity according to the KP-3.2 index; in school-age children 74.4%; maxillofacial anomalies in schoolchildren were diagnosed in 80.1% of cases, the prevalence of periodontal tissue diseases was 100%; with an oral hygiene index of 2.3. The quality of dental care, estimated by the index "level of dental care", was 9% for preschool children, 21% for schoolchildren, which corresponded to a poor and insufficient level of dental care. Indicators of congenital defects of the central nervous system are characterized by an increase and a combination of functional disorders. Not only is the maxillofacial region characterized by secondary changes in the morphological structure of bones, but also damage to organs and tissues of the oral cavity. (Mirsalikhova F.A., Eronov Y.K., 2019). Damage to the hard tissues of the teeth in diabetes is not more common than in healthy people and depends on the course of the underlying disease and hereditary factors. A.K. Iordanishvili, L.N. Soldatova, evaluating the dental status of children with diabetes, assessed somatic pathology for the condition of hard tissues of teeth, periodontal and the level of individual hygiene. Children were watched for a year. It has been established that children with type I diabetes mellitus are more likely than healthy children to suffer from periodontal inflammatory pathology, and their dental caries is more intense than in children without somatic diseases.

Diabetes mellitus is one of the progressive diseases worldwide leading to a large number of complications in various systems of the body, including dentofacial. The data of the WHO expert committee indicates an increase in the number of patients with diabetes mellitus worldwide, by 5-10% annually, and in the Russian Federation over the past 5 years there has been an increase in incidence from 10.4 to 13.4 cases per 100,000 children (N.V. . Belyaeva, T.V. Skochilova

2006). Childhood diabetes is a serious problem. In this regard, this disease is among the first priority national health programs of all countries of the world. (I.I.Dedov, 2007).

The treatment and prevention of dental diseases in children with diabetes is one of the most important and complex problems of dentistry. Its relevance is characterized by a high incidence of periodontal inflammatory diseases, the occurrence of chronic infections in the body, the incomplete development of the immune system in childhood, and the difficulty in stabilizing the mental state in abdominal pain (1).

**Objective:** To identify the effectiveness of prevention programs for major dental diseases in children with diabetes, living in an environmentally unfavorable environment.

For the first time, a set of biomedical risk factors for dental caries in children with diabetes will be studied.

For the first time, a program of dental medical examination of children with various forms of diabetes will be developed and tested, to prove the high effectiveness of oral diseases in children suffering from diabetes. For the first time, data will be obtained on the effectiveness of the rehabilitation of the oral cavity of children suffering from diabetes.

The necessity of conducting a clinical examination program for children with disabilities, individualized depending on the severity of diabetes mellitus, is substantiated. The leading risk factors for dental caries in children with diabetes will be established. Tactics of conducting preventive and therapeutic procedures for children with various forms of diabetes will be developed. To prove the possibility of oral sanitation using conservative methods of treatment in children with disabilities suffering from diabetes.

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