

A Study of Artificial Intelligence Education System and Traditional Education System

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Abstract— Application and usage of Artificial intelligence is increasing day by day in almost every arena. Therefore, education system has also offered a big platform for execution of intelligence technologies in it. A survey has been conducted on educational environment to understand the importance of different educational methods. In this analysis, 218 faculties of different disciplines from different colleges/universities and from different areas have been included. This research paper is an endeavor to compare and analyze artificial intelligence based educational environment and traditional environment using some common issues of teaching and learning.

Keywords— Artificial Intelligence, Education, Intelligent Systems, Intelligent Technologies

I. INTRODUCTION

Artificial Intelligence known as a science of wisdom, primarily incorporated claims like hypothesis tests of structures and necessary methods that are sufficient to intelligent behavior as a science [1]. Fundamentally the computational models of intelligent behavior cognition, sensing and action are studied in this branch of computer science. Artificial intelligence can manage area of potential and factual intelligent systems using fact of exploration. Mainly the intuitive analysis and design of intelligent units is artificial intelligence. Normally the field of engineering and mechanical has need of intelligence for developing intelligent machines to theorem proving, recognizing faces, trip planning, composing music, diagnosing diseases, discovering laws of science, design computer systems, playing chess, story writing, negotiating contracts, teaching in classroom, and legal advisor etc. All these tasks can be performed using intelligent systems of AI [4].

In India, artificial intelligence set-up is at budding stage with experiments and growing fast. Educational parameters in India have ignored lot of opportunities of excelling and doing well to improve level of education and educational technologies. Intelligence technologies are able to create an efficient educational environment for both faculties and students. Artificial intelligence is a bit expensive yet easy to use. Still plenty of barriers are there in successful execution of artificial intelligence in educational system of India, which needs to be eliminated urgently [2]. Whereas no doubt, traditional educational methods are also effective but some

applications are in dire need of implementation of intelligent technologies for imparting quality education in upcoming generation. Although education system of our country is more inclined towards classroom teaching methodologies, artificial intelligence techniques can be amended effortlessly.

II. FACULTIES' CONTRIBUTION / FEEDBACK

The educators were requested to give their feedback in a prescribed format which included various learning parameters such as reliability, personal interest, ability to communicate, role of students, improvement in education system, clarification of topics, faculty-student interaction, group discussion, level of learning and availability of extra help in the class. In this format, every faculty was supposed to rate considering these parameters according to students' importance in learning. After the collection of data from supporters of traditional learning and intelligence learning faculties through questionnaire, the data was analyzed by using rating method. The respondents from both the groups have rated different individual factors that contributed to the traditional as well as intelligence based learning. For comparison of AIES (Artificial Intelligence Education System) and TES (Traditional Education System), the data has been analyzed and represented with the help of table and bar graph. All the parameters are divided between AIES and TES for better analysis and representation [5].

The data is collected from the faculties of different disciplines for both artificial intelligence education system and traditional education system. Data is collected from

respondents in rating system from highest rate 5 to lowest rate 1. All parameters are framed in two separate tables for artificial intelligence education system and traditional education system. Every parameter has five options from rate 5, to rate 1 as options. The parameters are divided into two separate parts for analysis effectively, first five parameters are included in part-1 and remaining five parameters are included in part-2. For the analysis of responses, the data is tabulated as provided in table 1 and table 2.

III. ANALYSIS OF THE COLLECTED DATA

In the table 1 given below, the responses on different parameters like reliability, personal interest, role of students, participation of students and improvement in education system were marked by faculties from both the groups ranging from rank 5 to rank 1, there the rank 5 represents highest rating and rank 1 represents lowest rating. Every rank includes data of both AI environment and traditional environment. This study of AIES and TES represents a basic idea of current educational environment [2].

Table 1: Contribution of Individual Factors [Part 1]

Contribution to Overall Environment		Reliability	Personal Interest	Role of Students	Participation of Students	Improvement in Education System
Rank 5	AI Environment	107	78	72	71	111
	Traditional Environment	18	23	19	8	10
Rank 4	AI Environment	72	95	93	83	72
	Traditional Environment	104	68	51	67	55
Rank 3	AI Environment	22	34	43	56	26
	Traditional Environment	66	83	91	77	86
Rank 2	AI Environment	13	9	8	6	8
	Traditional Environment	20	29	46	54	55
Rank 1	AI Environment	4	2	2	2	1
	Traditional Environment	10	15	11	12	12

Similarly, for the analysis of remaining parameters like clarification of topics, faculty-student interaction, group

discussion, level of learning and availability of extra help in the class / session, we have tabulated the data as shown in table 2.

Table 2: Contribution of Individual Factors [Part 2]

Contribution to Overall Environment		Clarification of Topics	Faculty-Student Interaction	Group discussion	Level of Learning	Availability of extra help for the class
Rank 5	AI Environment	96	47	61	108	67
	Traditional Environment	11	17	19	3	14
Rank 4	AI Environment	74	105	96	59	89
	Traditional Environment	45	79	68	56	42
Rank 3	AI Environment	39	52	39	41	49
	Traditional Environment	95	75	83	92	85
Rank 2	AI Environment	4	8	17	6	9
	Traditional Environment	56	39	49	69	65
Rank 1	AI Environment	5	5	5	2	4
	Traditional Environment	11	8	8	8	12

In the above table, respondents from both the groups have given the responses in the remaining five parameters. In the subsequent section, we have analyzed all the parameters individually with the help of graphs. In the figure 1 to 10, individual parameters are rated in different categories as very high, high, medium, low and very low. All parameters are explained separately using bar charts and both environments are compared on the basis of all parameters.

A. Reliability:-Artificial intelligence educational system provides reliability to students that they can download contents related to any topic through intelligent technologies whereas traditional students have to purchase books from market. This restricts the traditional students from accessing more updated content for reference and deep study. Moreover intelligent technologies are available 24 hours for learning but faculties can give only limited time. AIES

students can easily solve their problems due to the availability of additional content on the knowledge base system. In TES, faculties have limited knowledge of the certain topics of subject and they have to study through their textbooks only. All these kinds of reliabilities are provided by intelligent technologies for improvement in learning of students. This implies that reliability in intelligence educational system is far better as compared to traditional environment.

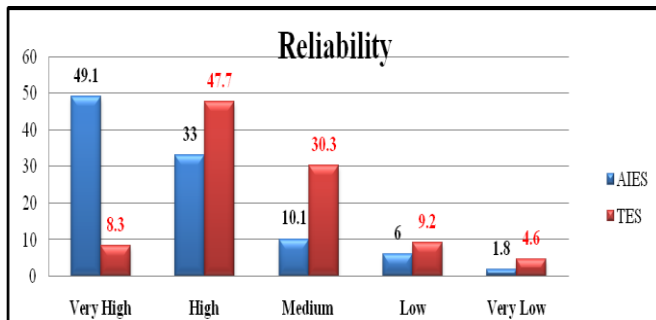


Figure 1: Contribution of Reliability

Due to the flexibility in accessing the content through intelligent tools and free availability of different types of books in demandable quantity, artificial intelligence educational system supporters rated it as very high in comparison to traditional supporters.

B. Personal Interest:-It is the most important parameter in overall educational environment; personal interest that plays a major role. Personal interest in learning enhances the knowledge as well as infuses self-motivation in the students. Therefore, it decreases the self-interest of traditional students. It is truly said that when student's participation is more then automatically personal interest is also more.

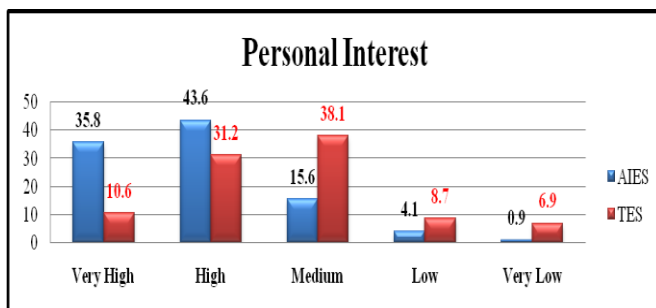


Figure 2: Contribution of Personal Interest

C. Ability to Communicate:-There is almost equal support for both environments. AIES students have limited source of asking questions in web-based systems such as discussion forums, through mails, chats and various blogs, and on other hand intelligent teaching assistant understands natural languages. It means students can communicate with intelligent technologies easily because intelligent systems

have powerful perception system and language processing techniques. The first thing of learning is a better communication, because without good communication a student is not able to understand that environment and feels disable in learning. So it can be said that intelligent technologies are able to communicate with students using some intelligent tools like multi-language and natural language processing systems.

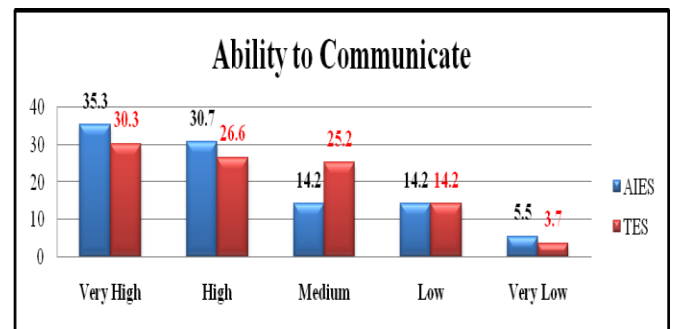


Figure 3: Contribution of Ability to Communicate

Communication is the key of learning and faculties provided responses on ability to communicate. The collected data is analyzed using bar chart. As faculty plays a minor role in artificial intelligence education system, so AIES students does not communicate with teachers or mentors but they easily communicate with AI based intelligent tutoring system because they have the ability of natural language processing.

D. Role of Students:-Participation of students in class is an important part of education system. Participation in the class also boosts up how much a student likes the class. It also adds to the interest of students, engagement of students develops important speaking skills and also gives the opportunity to practice using the language of the specific discipline.

Most learners participate in educational and non-educational activities at institution and develop a way of belonging. All these activities are necessary for complete growth of a student. The role of the student is very important from learning point of view. Classroom study is also a necessary part of a student's academic growth via improvisation of the ability to communicate with classmates, ability of group discussion and other cultural activities. Faculties and classmates are not available in intelligence based learning system so participation and involvement of the student is very high. In traditional learning, faculties also play a lead role in teaching and mentoring supplementing the role of students. AIES students search their own content; understand the lessons at their own level independently. Therefore, by this analysis we derive conclusions that independent involvement of AIES students is more than traditional learning students.

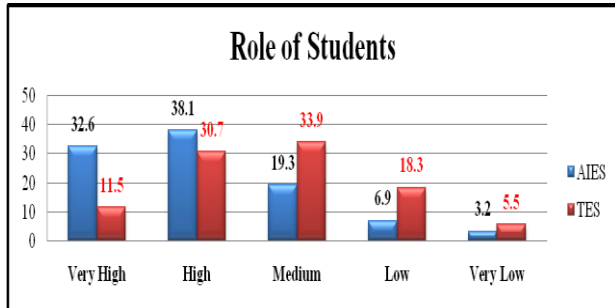


Figure 4: Contribution of Role of Students

E. Improvement in Education System:Improvement in education system is one of the major objectives in any mode of teaching / learning. Today, intelligent teaching / learning has become an attractive educational method as the use of technology enhances the self-motivational skills, independency, confidence, knowledge and personal interest of student.

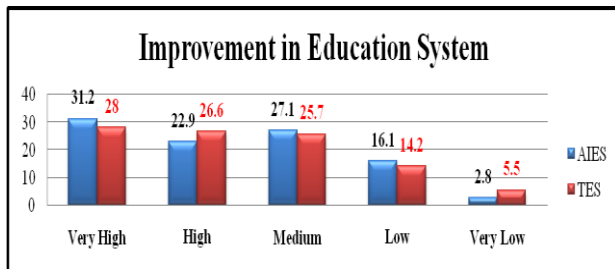


Figure 5: Contribution of Improvement in Education System

Intelligent technologies developed with strong features like natural language processing, speech recognition, multi-language processing and knowledge base system with large amount of data. Traditional learning also enriches the student's knowledge with the help of faculty and by course book. More supporters of AIES in comparison of traditional supporters believe that improvement during study is very high. With the proper use of advance and updated technologies in education, the improvement of education system in AIES students is more in comparison to traditional learning students. Intelligent technologies create a virtual environment of learning around the student and provide knowledge efficiently. Improvement in education system can be possible using intelligent technologies and intelligent learning environment.

F. Clarification of Topics:Clarification of a topic is a key feature of any education system. A better learning environment needs that every topic must be clearly explained in front of the students. It is necessary for the student that he understands each topic clearly without confusion for understanding next topics of the subject because almost topic of a subject are inter-related or dependent on each other.

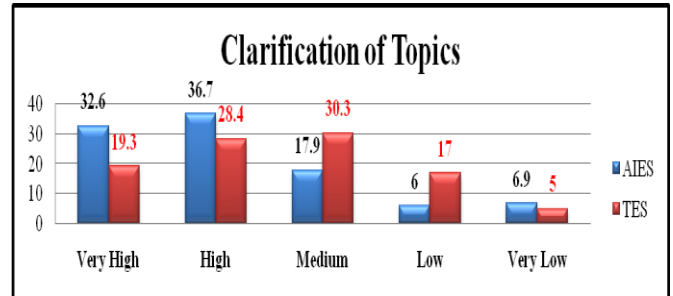


Figure 6: Contribution of Clarification of Topics

According to respondents, we can understand that the clarification of topics by intelligent tools is better than traditional methods. In AIES, students study with the use of Intelligent Assistants and they have large knowledge base that is the sea of knowledge as well as content. Therefore we can say that AIES students can easily solve their problems and there is no limitation for the availability of content on the knowledge base system that can seek knowledge from Internet also. In traditional environment, students can ask questions regarding their queries in the chapters from teachers and books only. Hence, more AIES students have given very high weightage to clarification of topics in learning as compared to traditional students.

G. Faculty-Student Interaction:In AIES, faculties have no role in student's learning. There are only virtual faculties as intelligent tutors and forums on the Internet. Therefore in AIES, faculty and student interaction have very low role during the teaching / learning. As without seed there is no fruit in the same way without faculty there is no learning in traditional classroom. Faculty has major role in traditional classroom. Therefore, in traditional education system, faculty student interaction has very high role as compared to AIES. When we use intelligent technologies at the place of faculties than there is only student and machine interaction, but intelligent machines are very smart and they can play the role of a faculty as well.

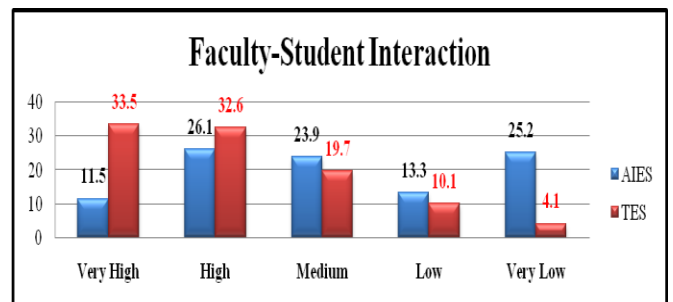


Figure 7: Contribution of Faculty-Student Interaction

Mainly the faculty-student interaction is an important parameter for any mode of learning. Interaction and participation of students in classroom enhance the self-interest of students. According to these data, we have

analyzed that the faculty-student interaction is more powerful in traditional education system than intelligent education system.

H. Group Discussion:-In AIES, students somehow feel isolated in comparison to traditional environment. In AIES there is lack of physical classroom, infrastructure and faculties. These students cannot discuss issues and problems related to learning with their classmates. AIES students have limited interaction with others as they have limited online forum and discussions. These students are unable to discuss in groups also. Therefore, according to faculties it is said that traditional students are more satisfied with group discussion that is why they have given high preference as compared to AIES students.

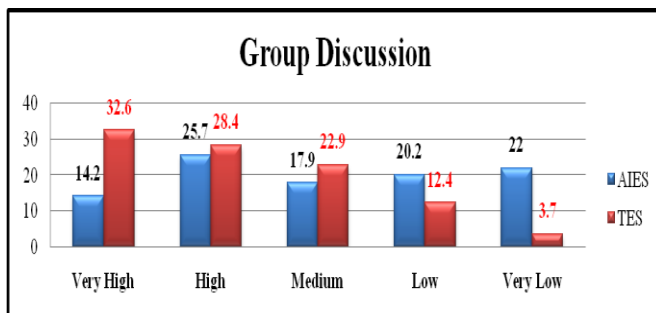


Figure 8: Contribution of Group Discussion

Group discussion is also a core part of good education system. It increases the ability to speak in front of anyone and it helps in building confidence, share knowledge with each other and develop new ideas. Only knowledge of subjects or books is not enough in today's competitive environment, we also need the knowledge of all factors we are surrounded with. So we really need to perform tasks like group discussion for wholesome development of a student. These figures of analysis present that the application of group discussion is more efficient for students in traditional environment.

I. Level Learning:-In AIES, technology plays a major role. To understand and use technology, it requires numerous skill, without skill and knowledge students are unable to learn through intelligent tutoring systems and e-learning. AIES is the way of learning electronically with the use of technology. For these type of students the level of learning that arises in AIES, is very high but many people in rural area are unaware about the use of technology or not able to study through technology. In traditional learning, there is no use of technology. Traditional learning requires only physical classroom with talented faculties, books and students. Hence, we can say that level of difficulty in traditional learning is very low. Students can easily study in the classroom without facing any difficulties as compared to AIES.

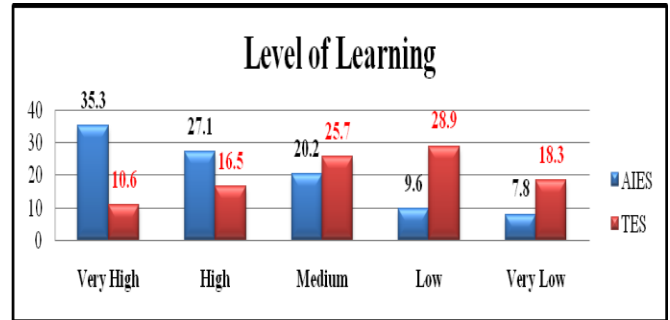


Figure 9: Contribution of Level Learning

Level of students' learning is an important factor of education system. It has to verify time-to-time that the level of students' learning is increased or decreased. Intelligent technologies are very interesting in use, so the expectation is that the level of learning through this will increase in future.

J. Availability of Extra Help in the Class:-In artificial intelligence based educational environment, student can avail the facility of learning with intelligent technologies at anytime and anywhere. It is a big advantage to the students because it provides services on demand. If AIES students are unable to understand any topic they can read anytime and anywhere after the class because there is no time limitation. By this we can say that, AIES students can avail the facility of extra help in unlimited times. In traditional learning, students have limited hours of the class they can ask for extra help in that one to two hours only. By this analysis, we can say that AIES supporters are more satisfied with the extra help in learning as compared to traditional learning. Faculties of almost all streams are fully supported intelligent educational technologies.

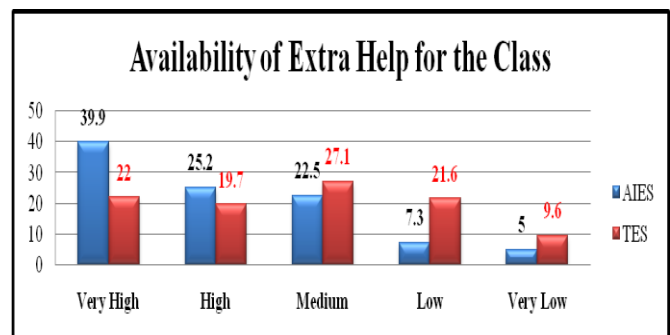


Figure 10: Contribution of Availability of Extra Help in the Class

All these parameters presented with bar graphs are dependent on the survey which is structured for collecting data from faculties of different streams to compare artificial intelligence education environment and traditional environment. Total 218 faculties participated in this survey and provided their valuable suggestions.

IV. CONCLUSION AND FUTURE SCOPE

According to analysis of all parameters, this has been found that maximum respondents supported updated intelligent technologies for betterment in education system. Faculties supported the parameters like reliability, personal interest, role of students, participation of students, improvement in education system, clarification of topics, level of learning and availability of extra help in the class / session in favour of artificial intelligence education system. The respondents have reinforced the parameters like faculty-student interaction and group discussion in favour of traditional educational environment. It means artificial intelligence technologies can serve the education system in a better way than other methodologies of imparting knowledge. The parameters of the survey were generalized and applicable to all disciplines of education. This survey highlights the necessity and requisite of the current hour, as our education system truly requires the implementation of intelligent technologies for betterment of our students and for survival at international level.

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