
ELIMINATE GENDER DISPARITY IN EDUCATION THROUGH TECHNOLOGY INTEGRATION IN CURRICULUM FOR EMPOWERING RURAL WOMEN

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Abstract: Women can be powerful agents of change. We recognize that gender equality and women's empowerment and the full realization of human rights for women and girls have a transformative and multiplier effect on sustainable development. One of the Millennium Development Goals (MDG) for ensuring equity and peace across the world is to remove the gap between male and female students in education. If careful attention is not paid and major steps are not taken, the situation will become extremely critical. Eradicating this gender gap and educating women by creating a bias free learning environment; where women can make independent decisions on their personal development as well as shine as equals in society is actually women empowerment. Thus, it is no real surprise that in India; it is a hotly discussed topic with no real solution looming in the horizon except providing equal opportunities to all in Education. For that, we should integrate technological assistance in teaching, Learning and Evaluation, because imparting quality education is an investment.

This Article provides a practical guide for the integration of gender into technology. Moreover, a model Computer Adaptive Testing (CAT) package is also provided for successful technology transfer. This paper also presents selected findings from the evaluation of the CAT scores and aimed to enhance rural women's access to interactive communication technologies (ICTs). The evaluation results also shows that many rural females experiences improvement in their achievement scores and when their Learning Rate is studied, it is proved that the rural female have high learning Rate compared to others when they are given technological assistance for learning.

Thus, the study infers that the rural females are having high hidden potentials for learning; and are not given enough opportunities or exposure for learning through technology. However, these results suggest that enhancing rural women's technological empowerment is urgently required which guarantees equal access to appropriate new technologies and provides good-quality education.

Keywords: Computer Adaptive Testing, Gender gap, Learning rate, Rural female education

Introduction: Any evidence that reveals progress towards the goals of education should be used in education. We recognize that gender equality and women's empowerment and the full realization of human rights for women and girls have a transformative and multiplier effect on sustainable development and are a driver of economic growth in developing countries like India. One of the Millennium Development Goals (MDG) for ensuring equity and peace across the world is to remove the gap between male and female students in education. All children have the equal rights to education and to equal quality of education. If careful attention is not paid and major steps are not taken, the situation will become extremely critical. Eradicating this gap and educating women about their real place in the world is a step that will largely set this entire movement rolling down the hill to crash and break the wall of intolerance, negligence and exploitation.

Creation of an environment where women can make independent decisions on their personal development as well as shine as equals in society is actually women empowerment. Equal opportunities should be given to all irrespective of their gender and locality, and then only we could expect radical changes in the Individual's education. Using computer these aims

can be achieved. In this paper, I have explained a system of evaluation using computer which is very useful for ability estimation & potential identification, which is very much needed for quality enhancement and also it can be used as an interactive learning tool.

Challenges Regarding Women Empowerment in India : There are several challenges that are currently plaguing the issues of women's rights in India. The Millennium Development Goals (MDG) is centered towards promoting gender equality and empowering women and are agreed upon to reduce certain indicators of disparity across the world by the year 2015. India missed the 2005 deadline of eliminating gender disparity in primary and secondary education. Achieving Gender Parity Index (GPI) in tertiary education also remains a challenge. However, the country has hastened progress and the GPI for Gross Enrolment Ratios (GER) in primary and secondary education has risen. India is moderately or almost nearly on track. However, as the Government of India MDG Report 2009 notes, "participation of women in employment and decision-making remains far less than that of men, and the disparity is not likely to be eliminated by 2015." These are contributory causes to the overarching status of women in India. Targeting

these issues will directly benefit the empowerment of women in India.

Computer Adaptive Test (CAT) : Computerized Adaptive Test (CAT) is an Individualized evaluation tool using computer technology for quality education and avoids gender bias. It is an innovative step to reduce the initial inequalities among students due to anxiety, stress, mental readiness etc. CAT aims at the efficient estimation of an examinee's ability and to classify the examinee's in to different categories without allowing them to cheat on the test and it is very much effective in reducing the bias of the ability estimates. It also aims at diagnosis and to provide information about specific content areas in which an examinee needs. It also helps to modernize India qualitatively with the aim of providing equal opportunity to all learners

Methodology: A package was developed on Physics concepts scientifically. Multiple choice questions are used as test items, which helps in objective evaluation and removes subjectivity The package of test items like Question bank was created at three levels (Below average, Average and Above Average) on Physics concepts and administrated through DOT NET program, that selects the level of testee by previous item and administer the next item based on the nature and level of response. Thus, based on the ability the chain of test continues till final. The

response pattern could be higher, average or low. It could be varying with the potential, interest, perseverance and other related variables.

The Pre Test, the Computer Adaptive Test, and the Post Test were administrated and data was collected. Finally, the analyses were carried out based on the hypotheses by using suitable statistical techniques.

Design of the Study: Quasi Experimental design.

Sample: Homogenous sample was selected based on the percentage of Marks from different Educational Environment and Locality, and Gender, using Randomized sampling technique.

Collection of Data: Pre-test was conducted for the samples, in basic Physics concepts before the process of CAT. A Computer Adaptive Test Package developed in basic Physics concepts was administered individually. The scores are automatically recorded in the package for further analysis and interpretation. A post- test was conducted to the same set of samples after completing the CAT. The data thus collected was statistically analyzed.

Results & Discussion : Ho. 1: When the learners interact with the Computerized Adaptive Test material there will be significant difference between the mean CAT Score of the students in terms of their Locality of the Institution, Gender and Educational Environment.

Table-I: Significance of difference between CAT Scores for various categories of learners

External Variables	independent	Total CAT score			Test	'p'	Sig.
		Range	Mean	SD			
Locality of the institution	Rural	576-971	744.7	107.4	't' value 1.606	0.113	NS
	Urban	604-1061	789.5	116.1			
Gender	Male	594-1013	762.8	121.0	't' value 0.091	0.928	NS
	Female	576-1061	765.3	104.7			
Educational environment	State Board	594-843	694.0	74.2	F- value 29.475	0.001	S
	Matric	576-923	760.0	82.8			
	CBSE	709-1061	891.8	92.0			

Inference: The CAT Score is the test score. To identify the ability estimate of the different categories of the learners, their score in the CAT material was analysed and given in Table I. The result shows that these Categories of learners (Gender, Locality of the Institution) do not differ significantly in their achievement. The influence of CAT material and the nature of interaction of the learners with the package vary considerably in the group categories in terms of Educational Environment. As a result, there found to

be significant level of difference between the samples. It may be because of the nature of curriculum pattern and the difference in opportunities provided in the schools for concept clarity and the changes in the evaluation pattern, which provides greater ability and potential for learning more.

Ho. 2: There will not be significant difference between the Mean scores in Post- test for different categories of learners in terms of their Locality, Gender and Educational environment.

Table-II: Significance of difference between Mean Post test scores for different categories of learners

External Independent Variables		Post test scores			'test'	'p'	Sig
		Range	Mean	SD			
<i>Locality of the Institution</i>	<i>Rural</i>	25-30	27.4	1.5	t-value 0.582	0.5629	NS
	<i>Urban</i>	25-30	27.6	1.6			
<i>Gender</i>	<i>Male</i>	25-30	27.4	1.5	t-value 0.349	0.7277	NS
	<i>Female</i>	25-30	27.5	1.7			
<i>Educational Environment</i>	<i>State Board</i>	25-30	27.0	1.5	F-value 7.619	0.0222	S
	<i>Matric</i>	25-30	27.5	1.5			
	<i>CBSE</i>	26-30	28.3	1.4			

Inference: When the mean Post Test scores for different categories of learners are taken into account, the different categories of learners in terms of Gender, Locality of the Institution does not show significant difference in their mean Post Test scores. The categories of students under Educational Environment shows significant level of difference in their Mean post test scores. The Post- Test is an Achievement test, which shows the influence of the CAT on the achievement of the learners. All the categories of students show better performance in their Mean Post test scores as compared to their mean pre test scores. It is obvious that, this high achievement is because of the interactivity effect given by the evaluative tool which also increases the Concept clarity, Aptitude in the subject and positive attitude in learning. The significant difference among the groups of different Educational Environmental shows the better performance and the high ability of CBSE students in the Technology mediated evaluation. This may be because of the activity oriented curriculum and the technological opportunity they have in their learning environment. **Learning Rate:** Learning Rate is one of the key parameter for learning and found to be a reliable and

authentic parameter in establishing any computer based individualized approach. It is in parity with the spirit of involvement in the process. It is the Speed of Processing. This computer based individualized approach provides a proper learning environment, which increases the speed of interaction with CAT, which may manifest their learning ability[8] CAT enables the students to achieve high through interactive test taking process. The researcher has found that CAT can enhance interaction rate. Student learning rate is faster with computer mode testing than with conventional instruction [2],[12]. The pace of interaction is dependent on learning kind, material, environment and the process associated. It establishes the behaviours' of the examinee in terms of the testing condition provided by the structured environment in achieving the objective. **Ho. 3:** When the learners interact with the Computerized Adaptive Test material the Learning Rate as the dependent variable will not be significantly different for the external independent variables.

Table-III: Significance of difference between the different categories of learners in terms of Learning Rate

Variables		Learning Rate			Test	'p'	Sig.
		Range	Mean	SD			
<i>Locality of the Institution</i>	<i>Rural</i>	1.43-2.09	1.67	0.13	't'-Test 1.009	0.3165	NS
	<i>Urban</i>	1.42-1.96	1.64	0.14			
<i>Gender</i>	<i>Male</i>	1.42-1.96	1.65	0.14	't'-Test 0.538	0.5925	NS
	<i>Female</i>	1.43-2.09	1.66	0.14			
<i>Educational Environment</i>	<i>State Board</i>	1.52-2.09	1.70	0.14	F-Test 9.037	0.0109	S
	<i>Matric</i>	1.42-1.96	1.67	0.12			
	<i>CBSE</i>	1.42-1.74	1.56	0.11			

The above table infers that there is no significant difference between the mean Learning Rate for the samples categorized based on the Locality of the Institution and Gender, but the samples categorized

based on their Educational Environment shows significant level of difference between them. They differ in their behavior in terms of the testing

condition provided by the structured environment in achieving the objective.

Inference: This infers that the state board students who have fewer opportunities to use computers for their studies show much sprit of involvement in the learning process with CAT. The higher Learning Rate shows the speed of interaction of the learners with the computer based material [8]. The high learning Rate shows the positive attitude towards learning [4]. This infers that their higher concentration which may manifest their learning ability and the potentials needed for learning in future scenario.

Ho.4: When the students are tested for their ability to Interact with CAT, the level of interaction between

the gender and Locality of the Institution will not be significant with respect to their Learning Rate

Gender bias is found to be a prevalent influencing factor on any effectiveness measurement of instructional instrument and the attribution to the Locality of learning may be a causative factor for difference in the ability level since the adaptive test item selection is on a common area, the Locality of the Institution may attribute to create differential level of potential among the sample. In Table-IV, the interactivity between rural female with the urban female and the rural female with the rural male shows difference in their performance as indicated by their learning rate

Table-IV: Rate of Interactivity between. Gender & Locality of the Institution in terms of their Learning Rate (Two Way ANOVA)

Gender	Locality of the Institution	n	Mean learning Rate	Std. Error	95% Confidence Interval	F value	Sig.
Female	R	19	1.7178	0.03006	1.6576 to 1.7779	7.818	(S)
	U	12	1.5856	0.03783	1.5099 to 1.6612		
Male	R	18	1.6235	0.03088	1.5617 to 1.6852		(N.S)
	U	16	1.6759	0.03276	1.6104 to 1.7414		

	UM	UF	RM	RF
RF	1.095 (N.S).	16.018 (S)	2.2677 (S)	
RM	0.949 (N.S).	1.009 (N.S)		
UF	1.7268 (N.S)			
UM				

Inference: When the gender difference was considered as a whole, there was no significance (Table-III) among the groups of gender and Locality of the Institution with respect to the Learning Rate, but when they are compared individually as rural female, rural male, urban female and urban male there was significant difference between the groups in terms of the Learning Rate. The study also proved that, the performance of the rural female is comparatively very low in terms of their CAT Score. But the high learning rate clearly indicates that, they are having high hidden potential to learn and achieve more. If technological assistance is provided or if proper learning environment is provided rural female can perform better.

Findings Of The Study : Educational needs of Rural female is the most necessity for national development as various commissions insisted. This study proves that, the female rural children are not given equal opportunities by parents, school and society. So, if they are given enough care, encouragement and technological supports in their education, they can perform better than others because several studies proved that, technology mediated learning avoids

many social problems and provides a conducive social environment.

The high learning rate of the rural female clearly indicates that, they are having high hidden potential to learn and achieve more. Thus, the innate potential of the learner can be assessed using this type of Individualized evaluation tools, like CAT. The government should take necessary steps to provide technological supports in Teaching, Learning and Evaluation in school curriculum which leads to acquisition to better Knowledge, and also influences in their attitude and leads to perfection.

The Computer Adaptive Test (CAT) in schools helps to identify the real ability and potentials of the learner which helps for quality enhancement in education. Thus, integrating technology in curriculum can provide equal opportunities to all kind of learners especially in rural female education.

Conclusion : It is universally accepted that the people of rural areas are lack of awareness on developmental aspects due to Socio- Economic aspects, there needs to be a sea-change in the mind-set of the people in the country. Not just the women themselves, but the men have to wake up to a world that is moving towards equality and equity. The Rural

Female's are very ignorant on educational rights due to traditional practices, without any rationality. Swami Vivekananda once said "arise away and stop not until the goal is reached". Thus, our country should thus be catapulted into the horizon of empowerment of women and revel in its glory.

We resolve to unlock the potential of women as drivers of sustainable development, including through the repeal of discriminatory laws and the removal of formal barriers, ensuring equal access to justice and legal support, the reform of institutions to ensure competence and capacity for gender mainstreaming and the development and adoption of

innovative and special approaches to address informal, harmful practices that act as barriers to gender equality. In this regard, we commit to create an enabling environment for improving the situation of women and girls everywhere, particularly in rural areas and local communities and among indigenous peoples and ethnic minorities. So, the government has to take steps to provide technological environment in Teaching, Learning and in Evaluation to identify the real potential for learning in learners irrespective of their gender and Locality, to create a better nation.

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