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Expert Opinion Article

Effectiveness Of Digital Learning Across the Curriculum On The Academic Performance of Secondary School Students

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ABSTRACT

The present study aims at preparing a Digital learning strategy based Self Designed Instructional Material for enhancing Academic Performance of secondary school students in Kerala and studied the effectiveness of the Digital learning Strategy on Academic Performance at Secondary level. The results indicate that the intervention using Digital learning Strategy was found significantly effective among Students at secondary level in Kerala .

Key Terms: *Digital learning strategy , Self Designed Instructional Material, Student Academic Performance, Student Motivation, Student interaction, Student Retention and Progress, Student Achievement, Secondary school Students .*

Introduction

"The journey of education in India, too, has been dotted with innumerable milestones, and the most recent among these is e-learning. The first IT-based teaching tool debuted in India in the 1980s through the advent of computer-based training, with study material being stored in CD-ROMs."… "The application of e-learning has traversed the boundaries of school and college education to permeate the entire learning spectrum, including internet-based coaching for examinations."

"Realizing the potential and effectiveness of this platform, the corporate India as well as many private players such as Core projects, Educomp Solutions, Everonn Education and NIIT , Centum Learning, with National Skill Development Corporation (NSDC), have established their presence in this segment in recent times."

"Flexibility, cost effectiveness and enhanced accessibility - these are but a few of the primary drivers of online education, and are the forces encouraging working professionals and students to revisit education despite busy schedules, via the online education platform". States Satish Kaushal, Executive Director Government advisory services, EY in ' Government & public sector services : New roads to learning: perspectives on e-learning in India-E-learning: moving toward a self-servicing society'

Review Of The Related Literature

In the project titled 'Design and Development of an online course contents on "Cyber Security" to be offered in E-learning mode' by Dr. N. Sarat Chandra Babu (2005) the course on Cyber Security is being offered through e-learning mode using e-Sikshak Framework.

The project titled, 'Enhancing Competency of IT teachers & Industry Professionals' by Prof. D.B. Phatak(2006), developed a Distance Education programme (DEP) has so far conducted 43 semester long courses, 14 short term courses and numerous guest lectures which have benefited over 6000 participants.

Dr. Yatindra Nath Singh(2006) in the project titled 'Development of content delivery tools to enhance the existing experimental education technology services'. Developed an open source free Learning Management System (LMS) named as Brihaspati. Developed an open source free Learning Management System (LMS) named as Brihaspati.

Shri A.B. Saha,(2004) in the project , 'Courseware creation for Quality Teaching of IT local Instructors using Interactive multimedia in Vernacular Languages (Bengali, Hindi, English)' to boost the quality of existing class room teaching/training in major cities (Non –Metro) in IT with interactive multimedia based courseware in Vernacular Languages (Bengali, Hindi & English).

DOEACC Society(2006) conducted 'Training of Trainers in E-learning' to introduce fundamentals of E-learning , H/w and S/w and train teachers for implementing e-learning for the better educational methodologies. 240 teachers trained (120 from each centre) in use of e-learning in education . Trained teachers will be able to locate and use/ reuse the course contents and create their own content in e-learning in their area of specialization and they will act as master trainer for their parent Institute. Create multiplier effect to use ICT technologies and create awareness about the usage of information tools, blending it with traditional skills to enhance quality and productivity in education.

Dr. Prem Kalra(2007)conducted a project titled' Data Compression Techniques and its Application to E-Learning/ Education' to develop of a group of data compression techniques that can be applied to images, scanned documents and videos; and hence creating a system that adapts itself to the quality of services (QoS) offered by the Internet (Network) connection instead of expecting a specific QoS on the Network.

Sh. Arup Chattopadhyay(2008) in the project titled, ' Development of Interactive Learning material on

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Introduction to Animation and Multimedia' developed an Interactive digital multimedia content on "Introduction to Animation and Multimedia".

Dr. Ankush Mittal/ Prof Manoj Mishra (2006)in the project titled ' Content-Based Streaming and Real-Time Regional Language Captioning of E-Learning Video Data', developed new standards and algorithms for e-learning adaptive streaming applications that can optimize the bandwidth utilization.Among the two Software Systems developed,the first is for video streaming over the network for the purpose of E-Learning and second is for regional language captioning.

Dr. N. Sarat Chandra Babu(2009) n the project titled, 'Development of a Quality Assurance Framework, Quality metrics, and prototype tool for evaluation and comparison of e-learning applications and training the teachers in e-Learning', developed a framework for formal quality assurance of e-Learning content. Develop quality metrics that can be used for quantifying the various quality parameters of a e-learning tool and the content.

Prof. V.K. Nangia(2011),in the report titled ' National Competitiveness in Knowledge Economy' for Mapping the directions of transition from industrial economy to knowledge economy

Shri VK Sharma(2006) project titled 'Design and Development of e-learning contents for e-security solution developers', designed the e-Learning contents of e-security covering number theory, cryptographic techniques for different target group of users to become e-security solution developers.

Dr. Yatindra Nath Singh (2009), in the project titled, 'Brihaspati phase-2: Development of Open source content delivery tools with advanced features', developed the Brihaspati Virtual Classroom tools further with better and modified architecture.

Dr. S. Birendra Singh,(2009),project titled 'Training of Teachers in E-learning' To introduce fundamentals of E-learning , Hardware w and Software and train teachers for implementing e-learning for the better educational methodologies.

Shri DK Jain(2013)in the project titled, ' Design and Development of Service Oriented Architecture based Standards Compliant e- Learning Framework with Personalized learning Features' conceived a service-oriented architecture for standard compliant e-learning framework complemented with web mining and Rich Internet Application technologies and developed a web 3.0 (semantic web) based personalized learning environment.

An experimental study on was conducted by Marin Jose and Dr.Celene Joseph (2013) in Kerala to implement e-learning to remediate the disorders in English Language in reading and writing skills in English.The e-Learning (interactive CDs and online-tests for diagnosis based on ICD 10/ DSM IV-TR ,e-resources and virtual learning environment(vle) were found effective in improving performance of LD children in reading and writing skills in English Language.

Dr. N. Sarat Chandra Babu (Ongoing)titled 'Design and Development of Context Aware Mobile assisted Augmented Reality Framework for Learning Environment.

Dr. Nirmal Kumar Roy (ongoing) project titled 'Development of Personalised and Performance based E-Learning tool for existing E-resources' to estimate the online learners' proficiency based on their navigation & search history.

Sunilkumar (ongoing) project titled ' MedSim – eLearning platform for Medical Simulation' to build a eLearning platform that supports Computer based Medical Simulations , Medical elearning platform, portal with Administrative, Assessment and reporting tools (Medical Framework).

Dr. Chandrashekar Ramanathan (ongoing) project titled ' Online Assessment and Evaluation System (OAES) for National Level Certification Examinations,' for the creation of item banks, development of evaluation methods and online assessment and evaluation system (OAES). O-Level program of NIELIT has been proposed as the basis for creation of item banks along with a suitable software platform to conduct online examinations, which will help in online evaluation of students' performance.

Dr. M. Sasikumar (ongoing) project titled ' Online Labs (OLabs) for school experiments - Phase 2' in order to develop M-Learning enhancements to framework to support OLabs on Android tablets, Enhance the framework for multi-lingual support and Extend OLabs for Class 9, 10 (Maths, Biology, English).

Shri BB Tiwari (ongoing) project titled 'Setting up ICT E-Learning Centres in 204 schools in Srikakulam district of Andhra Pradesh'in order to set up e-Learning ICT centres in 204 high schools in rural and tribal area of district Srikakulam to integrate ICT for learning and teaching to improve learning outcomes of rural and tribal children.

The key research evidences of implementing online/blended courses in schools, universities , initial teacher education, as well as CPD are proved effective, in the context of the UK. (Becta, 2003), But there is a lack of substantial evidence of literature in utilizing these facilities for school education in Indian context. Hence the investigator wants to , implement e-learning , in the Kerala context on an experimental set up.

NEED AND SIGNIFICANCE OF THE STUDY
Almost everywhere, education systems are in a state of rapid change. Globalisation has led to a desperate race in many countries to upgrade the skills of their

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workforce faster than their economies are being forced up the value chain. Building human capacity has become a process of chasing an ever-moving target. Rather than achieving well-established goals, it is now about institutionalizing flexibility, creativity and innovation and the management skills required to generate and cope with constant change.

In a globalised, postmodern world a rather different model of education has emerged. An individual, to participate fully in the new economy – as worker, consumer and responsible citizen – needs to be even better informed (and about global as well as local issues) and needs higher-order and more flexible skills. In globalised economies, English seems to have joined this list of basic skills. Quite simply, its function and place in the curriculum is no longer that of 'foreign language' and this is bringing about profound changes in who is learning English, their motives for learning it and their needs as learners.

As regional trade grows, encouraged by ASEAN, English is becoming an ever more valuable lingua franca in Asia. Traditionally, English belonged to the 'foreign languages' curriculum in secondary school and was typically taught from the age of 11 or 12. As English proficiency came to be seen as a necessary criterion of 'graduateness', universities in many countries began to require students of any subject to reach a certain standard of English proficiency before they were able to obtain their degree.

English has been spoken in India from colonial days and, since the infamous 'Macaulay Minute' of 1835, has featured prominently in Indian education.Kachru (2004) suggests 333 million people in India 'use English'
– a figure based on a survey by the magazine *India Today* in 1997, which reported
that over one third of Indians claimed to speak English. A survey of wage earners
in India, carried out in 2005, found that a similar proportion claimed to be able to 'read English', but less than half of those also claimed to 'speak English'.

In our country, 75% of the students are from rural areas and they are coming through regional language medium schools. Hence, based on their background, we have to design the syllabus and adopt methods to test their English language proficiency. Solely teaching grammar is not enough to prepare students for using the language independently. Students need to understand the meaning and the communicative function of a language in order to learn the language.

The Council of Chief State School Officers (CCSSO), U.S., defines English language proficiency in this way: A fully English proficient student is able to use English to ask questions, to understand teachers, and reading materials, to test ideas, and to challenge what isbeing asked in the classroom.
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Krashen and Terrell (1983) suggest that basic communication goals can be expressed in terms of situations, functions and topics. It is up to the teacher to plan the situations within which students will be able to use their language for a purpose in the classroom context.Our students need this approach a lot for developing their language and ,at the same time, life skills.

" Where ever feasible ICT should be made more accessible to teachers, students and administration for learning, training, research, administration, management, monitoring, etc. ...Computer-aided learning also requires training of teachers and other staff in order to make the best use of the technology." (Knowledge Commission,2008).
Hence there is a need for experimentation and evaluating its effectiveness in comparison with blended learning and traditional methods in Indian context. Hence the need of step by step implementation on an experimental way and evaluating its effectiveness in comparison with blended learning and traditional methods, and hence the relevance of the present study.

Statement Of The Problem
Based on these questions the investigator wants to conduct an experimental study of the effectiveness of the compare the effectiveness of e-Learning/e-tutoring with the effectiveness of the traditional face to face teaching using discourse oriented Pedagogy for the secondary school students against the cultural background of Kerala
Hence the present study is entitled as "**EFFECTIVENESS OF DIGITAL LEARNING STRATEGY ON ACADEMIC PERFORMANCE OF STUDENTS AT SECONDARY LEVEL**"
Definition Of Key Terms

A. Effectiveness
Effectives means the impact of a strategy or an instructional package. It is the outcome of the study when the influence of one factor or condition is dependent on the presence of another factor or condition.

B. LAC
'Learning Across the Curriculum' (LAC, pronounced as the initials L-A-C) is an exciting and innovative Intergrated learning and teaching method in contrast to the traditional classes. The term LAC is used to denote an integrated teaching learning

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approach in each subject that allow students to study a subject in an undifferentiated or integrated curriculum and allows taechers to prepare LAC teaching Manuals in their respective subjects.

C. Digital Learning Strategy

It is a self designed instructional material, course or plan of action designed that integrate sound pedagogy principles of teaching and learning with the use of technology, psychology, and values of human rights education.

D. Academic Performance

Academic Performance refers to the total scores obtained by an individual as measured in the Academic Performance test constructed by the investigator. Academic performance was calculated based on Student Academic Performance, Student Motivation, Student interaction, Student Retention and Progress, Student Achievement, at Secondary schools in Kerala.

E. Students of Secondary Schools in Kerala

Students at Secondary schools refers to the children studying in from secondary schools in Kerala which follows State Syllabus. This includes government, aided and unaided institutions under various districts in Kerala State.

Objectives of the study

The objectives of the present study are :
1. To develop an Digital Learning Strategy (self Designed Instructional Material) to enhance the Academic Performance of secondary schools in Kerala.
3. To study the effectiveness of Digital Learning Strategy Instructional Material on Student Academic Performance of secondary schools in Kerala.

Hypotheses of the study

1. There will be significant difference between the mean pre-test and post test scores of the experimental group taught using Digital Learning Strategy based Self Designed Instructional Material.
2. There will be significant difference between the mean pre-test and post test scores of the Control group taught using the existing Discourse Oriented Pedagogy.
3. There will be significant difference between the mean pre-test and post test scores of Academic Performance of the experimental group and control group.

Methodology

For the present study, the investigator adopted an experimental method. Investigator conducted a study among the Secondary School Students in Kerala with the aim of analyzing the effectiveness

of The Digital Learning Strategy based Self Designed Instructional Material to teach English at Secondary School level in Kerala. The study was conducted in the form of a 60 hours /one month to complete a unit which incorporated Human Right education.

Appropriate statistics was used for the analysis of data.

Procedure

By reviewing related literature , digital Learning Strategy for enhancing Academic performance was developed for Secondary school Students in Kerala state. The developed digital learning Strategy was tested to find out its effectiveness in an experimental set up. The scores thus obtained was analyzed using appropriate statistical techniques.

Design includes pre-test - (administration of measuring tools.) Treatment- (e-learning /e-tutoring /online support.) And post-test– administration of the measuring tools

Sample selected for the study

A sample of 264 secondary schools students was selected for the study.

Tools used for the study

The following tools will be used for the study
1. Lesson transcript based on digital learning strategy
2. Lesson transcript based on the existing Discourse Oriented Pedagogy
5. Academic performance Test

Data collection

The data for measuring the Academic performance of the learners were collected on two occasions. Before the treatment and after the treatment. The collected data were later on analyzed based on the nature of the data and objectives of the study.

Statistical techniques used

To measure the effectiveness of digital learning strategy on the academic performance of secondary school Students in Kerala, both descriptive and inferential statistics were used. Descriptive statistics –it means cumulative frequency percentage , bar diagram, ogive curves on the various dimensions, were calculated. Inferential statistics- critical ratio or ' t' was used to find out the significance of the difference between the means in order to reject or retain the null hypotheses. Genuineness of the mean difference on Academic Performance (Total) of Experimental and control groups using the technique of Analysis of Covariance(ANCOVA). The adjusted means for the post-test scores of students in the Experimental and control groups were calculated using regression coefficients.

Analysis and interpretation
The details of analysis are given below

Table 5.41 *Data and Result of Test of Significance of Difference between the Mean Pre-test, Post-test and Gain Scores on Academic Performance (Total) of Experimental and control groups*

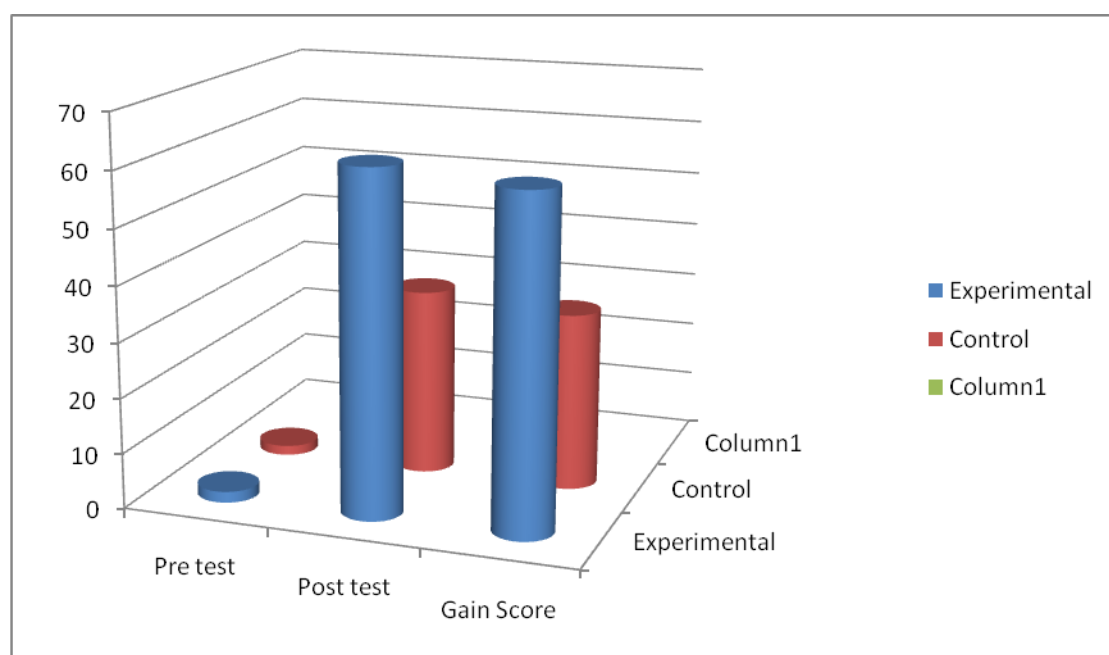| Scores	groups	N	Mean	SD	CR	Level of Significance
Pre-test	Experimental	132	**2.00**	**1.769**	1.285	Sig. (2-tailed) .000
	Control	132	1.7348	1.5768		
Post-test	Experimental	132	61.96	19.34	13.215	Sig. (2-tailed) .000
	Control	132	33.9697	14.8339		
Gain	Experimental	132	60.0687	19.6038	13.045	Sig. (2-tailed) .000
	Control	132	32.2348	14.6615		

Figure 5.15 Graphical Representation of the Pre-test, Post-test and Gain Scores on Academic Performance of Experimental and control groups.

Table 5.44 *Data for the Adjusted means of post-test scores on Academic Performance (total) of Experimental and control groups*

Group	N	Mx	My	Myx	't'-value
Experimental	132	2.00	61.9621	62.051	13.13
Control	132	1.7348	33.9697	33.9877	,p<.01
General Means					

Table 5.45 *Data and Result of test of Significance of Difference between the Mean pre-test, Post-test and Gain Scores on Academic Performance of Experimental and Control Groups with respect to Gender*

Gender	Scores	Groups	N	Mean	SD	CR	Level of Significance
Boys	Pre-test	Experimental	77	1.987	1.65	-0.187	Sig. (2-tailed) .000(.852)
		Control	77	2.039	1.78769		
	Post-test	Experimental	77	62.3636	19.51309	11.568	Sig. (2-tailed) .000
		Control	77	30.4805	14.28802		
	Gain	Experimental	77	60.376	19.38056	11.791	Sig. (2-tailed) .000
		Control	77	28.4416	13.75777		
Girls	Pre-test	Experimental	55	2.0182	1.93879	2.357	Sig.

		Control	55	1.3091	1.10341		(2-tailed) .000(.020)
	Post-test	Experimental	55	61.4	19.23692	6.973	Sig. (2-tailed) .000
		Control	55	38.8545	14.31189		
	Gain	Experimental	55	59.3818	19.99027	6.581	Sig. (2-tailed) .000
		Control	55	37.5455	14.3473		

Table 5.46 *Data and Result of Test of Significance of Difference between the Mean Post-test scores on Academic Performance of Experimental group with respect to Gender.*

Gender	N	Mean	SD	't'-value	Level of Significance
Boys	77	62.3636	19.51309	-0.281	P>0.05
Girls	55	61.400	19.23692		

Table 5.47 *Data and Result of test of Significance of Difference between the Mean pre-test, Post-test and Gain Scores on Academic Performance of Experimental and Control Groups with respect to type of Schools*

Types	Scores	groups	N	Mean	SD	CR	Level of Significance
Aided	Pre-test	Experimental	63	2.222	1.938	0.253	Sig. (2-tailed) .000 (.801)
		Control	66	2.1364	1.9126		
	Post-test	Experimental	63	46.1905	14.39	1.725	Sig. (2-tailed) .000 (.087)
		Control	66	42.0758	12.6737		
	Gain	Experimental	63	43.9683	14.23418	1.701	Sig. (2-tailed) .000 (.09)
		Control	66	39.9394	12.64896		
Govt.	Pre-test	Experimental	69	1.7971	1.5865	2.014	Sig. (2-tailed) .000 (.046)
		Control	66	1.3333	1.0127		
	Post-test	Experimental	69	76.3623	9.4914	26.878	Sig. (2-tailed) .000
		Control	66	25.8636	12.22342		
	Gain	Experimental	69	74.5652	9.9742	25.942	Sig. (2-tailed) .000
		Control	66	24.5303	12.35652		

Table 5.48 *Data and Result of Test of Significance of Difference between the Mean Post-test scores on Academic Performance of Experimental group with respect to type of Schools*

Gender	N	Mean	SD	't'-value	Level of Significance
Aided	69	76.3623	9.49144	**-14.333**	P>0.05
Govt	63	46.1905	14.39406		.000

Major Findings and Conclusions

The major findings of the study obtained by using the analysis of the data:

Hypothesis no:1

1. There exists no   significant difference between the Mean Pretest And Post Test And Gain Scores of Academic Performance Test of Secondary School students of the Experimental group and control group taught using Discourse Oriented Pedagogy.

When the pre-test scores of Academic Performance of the Experimental and control groups were compared, the critical ratio obtained is 1.285 which is not significant at 0.05 level. This shows that experimental and control groups do not differ significantly with respect to their Academic Performance prior to the treatment. But the comparison of the post-test scores (CR= 13.215) and gain scores (CR= 13.045) shows that the difference between the experimental and control groups is significant with respect to their Academic Performance (p<0.01) after the treatment. By analyzing the mean post-test scores and gain scores, it is clear that after the treatment the experimental group scored better than the control group. So it can be inferred that the Digital Learning   strategy is more effective than the present discourse oriented pedagogy   among students at secondary school level.

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Result of comparison of pre-test and post-test scores of Academic Performance test shows that calculated t value is higher than the table value at 0.05 level. **Hence reject the null hypothesis and accept the alternate hypothesis. So** there is significant difference between the pre-test and post-test scores of the Academic Performance test. The results indicate that there is improvement in the scores of students in Products after intervention using the Digital Learning Strategy. **Thus, the first hypothesis is rejected.**

Hypothesis No: 2
There exists no significant difference between the mean scores of the Pretest and Post test scores of Academic Performance test of the experimental group and Control group.

The analysis of data shows that The obtained 't' value is 13.13 which is significant at 0.01 level. Since the table value for 't' is 1.96 at 0.05 level and 2.58 at 0.01 level. This shows that the experimental group taught through the developed Digital Learning Strategy achieved better than the control group taught through the present discourse oriented pedagogy. So it can be inferred that the Digital Learning Strategy is more effective than the present discourse oriented pedagogy for enhancing Academic Performance of Students at Secondary level.

Result of comparison of pre-test and post-test scores of the test shows that calculated t value is higher than the table value at 0.01 level. **Hence reject the null hypothesis and accept the alternate hypothesis.** The results indicate that there is improvement in the scores of students in Academic Performance after intervention using the Digital learning strategy. **Thus, the Second hypothesis is rejected.**

Hypothesis No: 3
There exists no significant difference between the mean of the Pre test and post test scores of the Academic Performance of secondary school students with respect to gender.

The analysis of data shows that The above table reveals that the Experimental and control groups do not differ significantly in their mean pre-test scores on Academic Performance (total) with respect to Gender. Boys (CR=-0.187) and Girls (CR= 2.357). But they differ significantly at 0.01 level in their mean post-test scores on Academic Performance (Total); Boys(CR= 11.568) and Girls(CR= 6.973) and Gain Scores on Academic Performance (Total); Boys(CR= 11.791) and Girls(CR= 6.581). Also the mean scores shows that the boys and girls of the Experimental group achieve better than the boys and girls of the control group. The above analysis reveals that the developed Digital Learning strategy is more effective than the present discourse oriented pedagogy for enhancing Academic Performance of secondary school students both Boys and Girls. **Thus, the third hypothesis is rejected.**

Hypothesis No: 4
There exists no significant difference between the boys and girls of experimental group in their mean post-test scores on Academic Performance.

The above table reveals that the obtained 't value, -0.281 is less than the table value 1.96 at 0.05 level of significance. Therefore the boys and girls of experimental group do not differ significantly in their mean post-test scores on Academic Performance (Total). The above analysis reveal that the Digital learning strategy is equally beneficial for boys and girls for enhancing their Academic Performance.

Result of comparison of pre-test and post-test scores of Academic performance test shows that calculated t value is lower than the table value at 0.05 level. **Hence the null hypothesis is accepted.**

Hypothesis No: 5
There exists no significant difference between the Experimental and control groups in their mean pre-test scores on Academic Performance with respect to type of schools .

The above table reveals that the Experimental and control groups do not differ significantly in their mean pre-test scores on Academic Performance (total) with respect to type of schools . Aided schools (CR= 0.253) and Govt. Schools (CR= 2.014). But they differ significantly at 0.01 level in their mean post-test scores on Academic Performance (Total); m Aided (CR= 1.725) and Govt.(CR= 26.878) and Gain Scores on Academic performance (Total); aided (CR= 1.701) and Govt. schools(CR= 25.942). Also the mean scores shows that the boys and girls of the Experimental group achieve better than the aided and government school students of the control group. The above analysis reveals that the developed digital learning strategy is more effective than the present discourse oriented pedagogy for enhancing academic performance of secondary school students of both aided and government schools.

Result of comparison of pre-test and post-test scores of Academic Performance test shows that calculated t value is higher than the table value at 0.05 level. **Hence reject the null hypothesis and accept the alternate hypothesis.**

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Hypothesis No: 6
There exists no significant difference between the students of aided and government schools of experimental group in their mean post-test scores on Academic performance in English.

The above table reveals that the obtained 't value, -14.333 is higher than the table value 1.96 at 0.05 level of significance. Therefore the students of aided and government schools of experimental group differ significantly in their mean post-test scores of academic performance (Total). The above analysis reveal that the digital learning strategy is more beneficial for students of government schools than for students of aided schools for enhancing their Academic performance in English.

Result of comparison of pre-test and post-test scores of Academic performance test shows that calculated t value is higher than the table value at 0.05 level. **Hence reject the null hypothesis and accept the alternate hypothesis.**

Tenability of hypotheses
Tenability of hypothesis was examined in the major findings of the study. Four major hypotheses were formulated for the present study. The study provides sufficient evidence to decide the validity of the hypotheses set for it. Under this heading, the investigator makes an attempt to examine the validity of the hypothesis.

Educational implications and recommendations
Implementing online/blended courses in school education, ensure interaction and enhance communicative competencies in the following aspects: 1.during teaching learning process 2. web based resources are for self study. 3. Collaborative projects, 4.Webquests, online resources. And discussion forum. 5. online home study skills support . 5. Online mentoring 6. Online tutorial 7. Collaborative work like creating a wiki or blog ,e-portfolio or online community by the learners. 8. Online stimulations and experimentations and virtual tours. and 9. Out reaching the disadvantaged or hospitalized ones. 10. Tele- conferencing with the other experts on line etc. 10. International Collaboration 11 Online research supervising.
Digital Learning strategy can be adapted to provide quality education and cater to individual difference at various educational levels. Further studies can be conducted on the e maturity of the institutions and its impact in the Students. The gender differences and its impact in digital learning and other components can be studied. The types of schools and its impact in the development of variables also need to be studied. The impact of the e-maturity of the intuitions on the exposure and use of various eLearning strategies are to be studied .The use of ICT based Strategies can be applied to other languages as well as subjects. As well as a wider population like nation wide one.

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