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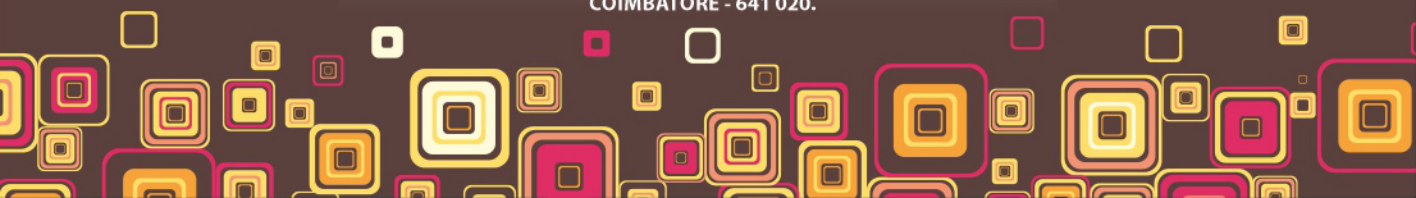
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THE EMERGING TECHNOLOGIES FOR HIGHER EDUCATION

1

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INTRODUCTION

Technology provides an equal opportunity for everyone to learn. Technology plays for creating learning environments that extend the possibilities of one-way communication media, such as movies, documentaries, television shows and music into new areas that require interactive learning like visualizations and student-created content. The use of media in teaching and learning can generate new desires and interests to encourage motivation, stimulation and learning activities and even brought psychological influences on the students. Today's colleges and universities face numerous challenges, with rising tuition costs and pressures for educational reform. Numerous technologies are emerging that aim, in part, to address these challenges. Higher education institutions have to re-conceptualize the notion of learning as a means of building up knowledge in a participatory and collaborative way.

Higher education needs to be balanced between student expectations and market requirements. In this context, e-learning is a particularly appropriate means of working. The massification of higher education has resulted in institutions extending their access to meet the varied needs of students. ICTs have supported the growth and diversification of academic quality and supply while reducing social differences. The use of new technologies appears to be an effective alternative for achieving widespread quality education for a large number of people. Information and communication technologies (ICTs) have had an impact on higher education worldwide.

THE EMERGING TECHNOLOGIES FOR HIGHER EDUCATION

Emerging Technologies for Higher Education are

1. Computerized Grading
2. Electronic Textbooks (E-Textbooks)

3. Simulation Technology
4. Gamification
5. Flipped Classrooms
6. Active Learning Classrooms
7. Massive Open Online Courses (MOOCs)
8. Collaborative Distance Learning Environments
9. The Active Learning Forum Platform
10. Learning Management Systems (LMSs)

COMPUTERIZED GRADING

Computerized grading is not new; indeed, educators have relied on computerized grading for years. Computerized grading of written, free-form short answers or essays has not yet been fully realized but is rapidly gaining attention as a new technology for education. Computerized grading applies the techniques of machine learning and artificial intelligence to determine statistically the probability that a human grader would give a particular grade to an essay. A software program does this by searching for aspects of writing such as the number of words, spelling, sentence structure, use of punctuation, average length of a word, average length of a sentence, accuracy of quotes against source material and etc. A number of companies are developing software for computer grading.

E-TEXTBOOKS

E-textbooks offer the opportunity to enhance written text with hyperlinks to additional resources, including other textbooks or readings, videos, audio feeds and slide presentations. Theoretically, e-textbooks could link students to real-world data sets or streaming sensor data and thereby empower students with data to explore graphical software packages, statistical tests and other forms of data analysis. The goal of e-textbooks is to create a truly dynamic, interactive learning experience, in which students and teachers can simultaneously immerse themselves in the learning experience. E-textbooks provide greater portability at a reduced cost when compared to traditional paper textbooks. In fact, students continue to prefer traditional paper textbooks over e-textbooks, even though they have adopted other forms of digital learning, such as online course materials and discussion forums. A number of companies specialize in the development and marketing of e-textbooks and other digital course materials, including Apple and Google.

SIMULATION TECHNOLOGY

The use of simulation technology as a learning tool traces its roots to the urgent need to improve safety in the aviation industry. The premise underlying flight simulation is to

create a realistic (but simulated) flying environment in order to safely train pilots. The idea dates back to the origins of modern airplanes, when pilots would be trained by sitting in the glider of a plane while facing strong winds, thus allowing the pilot to get a feel for the plane in a realistic setting. Modern flight simulation typically incorporates advanced technologies such as sensors and virtual reality displays to better simulate the “real” experience of flying, including any emergency situations that may arise. Simulation technology has since been adopted as an established training tool by the military and certain high-risk industries such as nuclear energy.

GAMIFICATION

Game-based learning is not a new concept and many educators routinely incorporate games into their lesson plans, particularly at the preschool and early elementary school levels. Gamification can be considered as a very specific type of simulation technology; it refers to the use of game theory and practices in the development of digital simulations for e-learning (i.e., game-informed learning). Gamification is based on the theory that students will be more engaged with the learning process and will ultimately achieve greater academic success if learning is based on gaming concepts such as competition, incentives and goal attainment. Many

e-learning games are available today; some of these are targeted for individual learners, but many are intended for teams and some have options for either individuals or teams.

FLIPPED CLASSROOMS

Flipped Classroom in which educators prepare online lectures and an interactive lesson that students are required to review before coming to class and class time is spent engaging in hands-on “homework,” discussion, and other classroom activities. The model is such that the educator moves from “on-stage” lecturer to “on-the-side” tutor, thereby providing more personalized instruction; in this regard, flipped learning embraces several of the principles of “active learning”. Educators, including those in higher education, are embracing the Flipped Classroom.

ACTIVE LEARNING CLASSROOMS

Active Learning Classrooms are designed to promote the concept of “active learning” into in-person classroom environments of any size, for virtually any type of course. Active learning involves the engagement of students and educators in the learning process through collaborative classroom activities and reflection. Active Learning Classrooms are engineered and designed to promote these behaviours. They feature round, computer and network

equipped tables to accommodate small student teams, a central teaching station to promote teacher circulation around the classroom (as opposed to traditional podium lectures) and multiple computer screens placed strategically around the classroom to enhance visual learning and create a dynamic learning environment. The design of Active Learning Classrooms is intended to promote team-oriented, highly collaborative, student-driven but teacher-facilitated, hands-on interactive learning, with the goal of better preparing students for the “real world.”

MASSIVE OPEN ONLINE COURSES (MOOCs)

The Massive Open Online Course (MOOC) teaching format has its roots in the philosophical approach of the Open University and the technological platform of traditional online courses. Canadian educators Stephen Downes and George Siemens, both of the University of Manitoba, are credited for introducing the first predecessor to today’s MOOC, with their 2008 open online course titled “Connectivism and Connective Knowledge/2008 (CCK08). The course was offered free of charge and with open admission, and it adopted a wide variety of digital platforms, including forums, blogs, wiki pages and other forms of social media, with the goal of creating an online community of engaged and connected

students. While CCK08 enrolled more than 2,000 students, the first truly massive MOOC was introduced in 2012 by Stanford educators Sebastian Thrun and Peter Norvig, whose “Introduction to Artificial Intelligence” course attracted more than 160,000 students, thus launching the term Massive Open Online Course or MOOC. Today, thousands of MOOCs are available through a variety of academic and commercial providers, with some offered free and others available for a fee. While the MOOCs vary in accessibility, content, approach, size and teacher credentials, they are all true courses in the sense that they have requirements (e.g., assignments and evaluations) and are time-limited (e.g., a traditional semester).

COLLABORATIVE DISTANCE LEARNING ENVIRONMENTS

Collaborative Distance Learning Environments are similar to the Active Learning Classrooms and MOOCs described above, but they aim to take those concepts one step further through active learning among distant, distributed networks of students. Most courses that aim to achieve collaborative distance learning rely on a combination of technologies, such as online lectures, interactive whiteboards, personal devices, cameras, sound amplification, multimedia (e.g., video, audio, Web), collaborative learning

software (e.g., Google docs, Yammer, Red Pen, etc.), instructional games and conferencing tools (Skype, Google+ Hangout, Blackboard Collaborate, etc.). Social media plays a critical role in collaborative distance learning by promoting the integration of technologies, humanization of virtual interactions and personalization of learning. The combination of high-quality, richly-integrated technologies and best practices in their use is believed to be associated with positive collaborative distance learning outcomes and a limited amount of research supports that notion.

ACTIVE LEARNING FORUM

The proprietary Active Learning Forum is a collaborative distance learning platform that fuels the online curriculum at the Minerva® Schools at Keck Graduate Institute. Minerva is an accredited, for-profit, four-year undergraduate institution that aims to revolutionize higher education through its combination of international “real-world” fieldwork and entirely online, distance coursework. Unlike MOOCs, Minerva’s online courses are restricted to small groups of students (fewer than 20 per course) in order to facilitate dynamic interactions between teachers and students in a manner similar to the Active Learning Classroom but with all interactions occurring remotely.

The Active Learning Forum platform provides several key capabilities: interactive discussions; real-time debate options; responsive gesture control to enable 3-D manipulation of digital objects; real-time simulations to demonstrate complex analyses; dynamic, collaborative document creation; dynamic polls and quizzes; live breakout sessions involving small groups of students and facilitated by the professor; and enhanced office hours designed to provide individual students with up-to-date feedback on course performance and to track progress.

LEARNING MANAGEMENT SYSTEMS (LMSS)

A variety of open source and commercial LMSs are available and designed to support all aspects of e-learning and the needs of all stakeholders, including students, educators/employers, administrators, and IT staff. A typical LMS provides automated administration (including integration with human resource systems), calendar support, course design, document and curriculum management, student registration support, tracking of student and organization progress, basic assessment and testing tools, synchronous collaboration tools such as webcasts, and a variety of other features, including training.

CONCLUSION

Technology has heralded our present knowledge economy and given rise to a generation of students who have never known life without a computer. These changes will have a significant ripple effect on higher education. Over the next decade, advanced technologies will put education within the reach of many more individuals

around the world and will allow greater specialization in curriculum and teaching methodologies than ever before. Education and technology have historically evolved together and will continue to do so. The technologies discussed herein have the potential to improve higher education; however, technology alone is insufficient to address the many challenges students and educators face today.

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STRATEGIES AND IMPACTS OF LEARNING STYLES IN HIGHER SECONDARY STUDENTS

2

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INTRODUCTION

“Learning styles” is a concept, which attempts to describe the methods by which people gain information about their environment. People can learn through seeing (Visually), hearing (auditory) or through touching (tactile) or manipulating of an object. Information about learning style can help faculty become more sensitive to the difference students bring to the classroom. It can also serve as a guide in designing learning experience the match or mismatch student’s styles, depending on the teacher’s purpose. Knowledge of learning style helps the students and enables them to do so thoughtfully and systematically.

Hemispherical dominance in learning

An important aspect in understanding learning styles in understanding the brain functioning. Our brain seems to be designed to govern actions. The action always seems to be practical and successful goal-oriented. It organizes information

from our sense organs to provide in an orderly manner for our perception of the world affairs to us. It learns from our experiences and stores our memories. It retains appropriate memories, plans for the future, thinks and reasons creatively. It is divided into two hemispheres, the right and the left hemisphere. The functions of the right hemisphere have been described as creative, divergently productive, deductive, intuitive, holistic, concrete and logic. The left hemisphere is considered to be a rational linear mind specializing in sequential processing, logical, analytical thinking, inductive and convergent in production of ideas.

Wittrock, M.C. (1978) inferred that the right hemisphere may be more intuitive, imaginative, insightful has a rudimentary verbal conceptual scheme, aesthetic experiences, produces visual imagery, see things in a broader perspective, uses the information from the left hemisphere to elaborate, to form new combinations, to attribute new meanings to it. A. Hilliard describes learning style as the

sum of the patterns of how individuals develop habitual ways of responding to experience and distinguishes learning styles by considering the analytic vs the holistic learners. The analytic learner is predominantly left brained. He/she is a successive processor preferring to learn in a step by step sequential format, beginning with details leading to a conceptual understanding of a skill. The global learner uses the right side of the brain predominantly in their learning applications. A simultaneous processor (right brain) prefers to learn beginning with the general concept and then going on to specifics.

Need and Significance of the study

Need to be taken to test a learning style is intended to help children come to a better understanding of how they can learn in the easiest, most efficient way possible. It also sheds light on what areas need improvement. It is very beneficial for a student to work, train and strengthen weak areas. These weak areas can be uncovered using proper learning styles. The foundation of learning styles boils down to cognitive skills. Cognitive skills are the fundamental tools our mind uses for everything from memory to processing speed. When we train the different learning styles, you're training the cognitive skills. After pinpointing the root problems, trail the

areas that need improvement so that all the learning styles can be properly utilized and the cognitive skills can function optimally. Every child has a different combination of learning styles. Learning styles cannot easily be changed. It is not enough to develop an awareness of one's learning style; this awareness must be translated into a zone of comfort for learning strategy. Hence the present investigation is undertaken to find whether there is any significant influence of learning style among higher secondary students.

OBJECTIVES OF THE STUDY

The objectives framed in the present study are listed below:

- To find out the level of learning styles of higher secondary students.
- To find out whether there is any significant association between the categories of learning styles of higher secondary students and the categories of gender, birth order and type of family.

HYPOTHESES OF THE STUDY

The hypotheses framed in the present study are listed below:

- The category of learning styles of higher secondary students is left dominated in nature.
- There is no significant association between the categories of learning

styles of higher secondary students and the categories of gender, birth order and type of family.

Design of the study

Population and Sample

The present investigation is carried out in the Thiruvallur District in Tamilnadu. 295 higher secondary students were selected using simple random sampling technique. As the study intends to collect data pertaining to learning style among higher secondary students, survey method was used. The study was carried out in government school, government aided school and private schools of Thiruvallur district.

Tools used

Hilliard's hemispheric dominance learning style inventory developed and validated by A. Hilliard.

Pilot study

A pilot study was conducted to determine the suitability of the tools used in the present investigation. A random sample of 50 higher secondary students was selected to establish the reliability and validity of the tools.

DATA ANALYSIS

Hypothesis 1

The category of learning styles of higher secondary students is left dominated in nature

Table1

Showing the categorization of students based on hemispheric dominance learning styles

Groups	Number of students	Percentage
Analytical	190	64.6
Global	104	35.4
Total	294	100

The above table reveals that a very high proportion (64.6%) of students in the sample seems to be analytic oriented in their learning. Hence hypothesis stating that the category of learning styles of higher secondary students is left dominated in nature is accepted.

Hypothesis 2

There is no significant association between the categories of learning styles of higher secondary students with regard to gender.

Table 2

Showing Chi-square test revealing the extent of association between the hemispheric learning style and gender

Gender	Hemispheric Dominance		Total
	Left	Right	
Male	89 (65.9)	46 (34.1)	135
Female	101 (63.5)	58 (36.5)	159
Total	190 (64.6)	104 (35.4)	294

Df=1

Value = 0.18456

Table value at 0.05 level is 3.841.

Comparing the obtained value of chi-square (0.18456) with that of table value (3.841) at 0.05 level, we find that hemispheric dominance learning style and gender are not significantly related. Hence hypothesis stating that there is no significant association between the categories of learning styles of higher

secondary students with regard to gender is accepted.

Hypothesis 3

There is no significant association between the categories of learning styles of higher secondary students with regard to birth order.

Table 3

Showing Chi-square test revealing the extent of association between the hemispheric dominance learning style and birth order

Birth Order	Hemispheric Dominance		Total
	Left	Right	
First born	87 (65.4)	46 (34.6)	133
Middle born	46 (61.3)	29 (38.7)	75
Last born	57 (66.3)	29 (33.7)	86
Total	190	104	294

Df = 2

Value = 0.49457

Table value at 0.05 level is 5.991.

Comparing the obtained value of chi-square (0.49457) with that of table value (5.991) at 0.05 level, we find that hemispheric dominance learning style and birth order are not significantly related. Hence hypothesis stating that there is no significant association between the categories of learning

styles of higher secondary students with regard to birth order is accepted.

Hypothesis 4

There is no significant association between the categories of learning styles of higher secondary students with regard to type of family

Table 4
Showing Chi-square test revealing the extent of association between the hemispheric learning style and type of family

Type of family	Hemispheric	Dominance	Total
	Left	Right	
Joint	41 (52.6)	37 (47.4)	78
Nuclear	149 (69.0)	67 (31.0)	216
Total	190	104	294

Df = 1

Value = 6.15642

Table value at .05 level is 6.635.

Comparing the obtained value of chi-square (6.15642) with that of table value (6.635) at 0.01 level, we find that hemispheric dominance learning style and type of family are not significantly related. Hence hypothesis stating that there is no significant association between the categories of learning styles of higher secondary students with regard to type of family is accepted.

thinkers. The category of learning styles of higher secondary students is analytic oriented in nature. The hemispheric dominance learning style and gender are not significantly associated. There is no significant association between learning style and birth order. The hemispheric dominance learning style and type of family are not significantly associated.

Major Findings

Categories of hemispherical dominance learning style of higher secondary students are 64.6% of the students are analytical thinkers and 35.4% of the students are global

Educational Implications

Neurological studies indicate that education as it is now structured develops only one part of the human brain i.e., (left brain) untouched which has a high level potential. Different

teaching techniques and methodologies can be adopted to influence and activate the integrated hemisphere functions of the brain. For developing proper learning styles, school should provide seminars on time management, summarizing techniques and creative writings. Enough copies of the animated software should be developed for

teaching school subjects to lead students to develop a proper learning style.

CONCLUSION

The investigator concluded that it is a duty of every student to focus on the inducement of learning style among the students with appropriate strategies which will definitely improve the academic achievement of the students.

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SELF-CONCEPT OF HIGHER SECONDARY STUDENTS WITH REFERENCE TO GENDER AND DIFFERENT TYPES OF SCHOOLS IN SALEM DISTRICT

3

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INTRODUCTION

The self-concept is the subjective nucleus of the personality. Though several meanings can be assigned to the concept 'self' but as pointed by Hall and Lindzey (1957) two of them are important. Firstly it is used frequently to refer to a person's attitude and feelings about him and secondly it is regarded as a group psychological process which governs attitude, feelings and intelligence. Wool Folk (2001) says, "Self-concept is defined as the value that an individual places on his or her own characteristics, qualities, abilities and action". As we look forward in the world we find different people performing different tasks. Some are satisfied with life and work while some are disappointed with life and work. Some are moving towards progress and some still idle. All these activities are dependent on their self-concept. Stanley Hall (1904) described adolescence as a period of great "storm and stress", corresponding to the time when the human race was

in a turbulent, transitional stage on the way to becoming civilized (Lama Majed Al-Qaisy and Jihad Turki, 2011).

Adolescence is the period of heightened sensitivity for rapid learning and of critical acquisitions which determine the general style of adult life. Adolescence is the period of transition from a relatively dependent childhood to the psychological, social and economic self-sufficiency of adulthood (Shubhangi Kamble, 2009).

It is the time during which many developmental changes takes place in the individual like the way he thinks looks and behaves. Adolescence is the period of time when the surge of life reaches its highest peak (Jersild, 1963). Adolescence can be a time of high risk for children, where newfound freedoms can result in decisions that drastically open up or close off life opportunities. Achievement during this period can be a stepping stone for the forth coming year. Only if an adolescent has good achievement motivation and self-concept he can succeed in life.

Self-concept is considered by many researchers as the central theme of life which affects all relationships, performances and achievements either positively or negatively. The basic assumption is that individuals who feel good about themselves and their abilities are the ones who are most likely to succeed. Academic success or failure appears to be as deeply rooted in concept of self as it is in measured mental ability.

The self-concept is how we think about and evaluate ourselves. To be aware of oneself is to have a concept of oneself. Self-concept has been defined as the individual's way of looking at himself. It also signifies his way of thinking, feeling and behaving (Saraswat and Gaur, 1981). Self-concept is one of the dominant factors of personality. It means how one thinks or feels about oneself and one's evaluation of one's own abilities and attributes. Students with a positive self-concept are to be confident and assertive in their judgments and abilities. Students with a negative self-concept are described as quiet, unoriginal, lacking in initiative, withdrawn and so on (Copper Smith, 1967).

NEED AND SIGNIFICANCE OF THE STUDY

The self-concept is an image which an individual has of himself. Self-concept is an individual's valuation of his or her own ability and attributes. It

includes all the aspects of an individual person's ability of which he or she is aware. Self-concept consists of the beliefs that people hold about their abilities, interests, aptitudes and psychological characteristics. It is a dominant element in personality pattern and there is a very positive connection between a person's self-esteem and his success in life.

Self-concept is an important element in the growth and developmental process for individual human beings. Higher secondary school education is the foundation for higher education. In higher secondary schools, curriculum is common; also the students of this age are adolescents. Self-concept at school seems to be affected by the image that other significant persons (teachers, parents, peers) have impact on the pupil (Burns, 1982; Cugmas, 1992; Harter, 1986) and by social comparison with others in the same setting (Rogers, Smith, Coleman, 1978). In any investigation of success or failure in school students, it is essential to understand both the characteristics of the individual and the situational forces that surrounded him and his functioning. It requires viewing the self-concept as functioning in a particular setup. Therefore, it is timely to conduct a research to examine this particular issue. In the present study, the researcher attempted to study self-concept in relation to the students studying in different types of schools in Salem district.

REVIEW OF RELATED LITERATURE

For any researcher, it need not be emphasized that the review of studies related to his area of investigation is essential, but providing information of what has already been done in the field gives direction to the present study.

Pujar and Gaonkar (1997) investigated the influence of age and type of family on self-concept of 142 high and 142 low achieving adolescents. The sample consisted of 8th, 9th and 10th standard students. The study revealed that with the advancement of age, the level of self-concept increased among high and low achievers.

Coover and Murphy (2000) conducted a study that examined the relationship between self-identity and academic persistence and achievement in a counter stereotypical domain. The study revealed that the higher the self-concept and self-schema, the more positive the self-descriptions, the better the academic achievement at 18. The study also showed that self-identity improves through social interaction and communication with others, which would enhance achievement.

Abisamra (2000) conducted a study to see whether there is a relationship between emotional intelligence and academic success. The population of the study was five hundred 11th graders-- boys and girls-- from public and private schools in Montgomery, Alabama.

Sood (2006) investigated the educational choice in relation to academic stress, achievement motivation and academic self-concept. There were 90 boys and 90 girls. They varied in age from 17-19 years. The results reported that subjects who had high achievement motivation had a high academic self-concept.

OBJECTIVES OF THE STUDY

To find out the Self-concept level among higher secondary students based on Gender and different types of higher secondary schools in Salem district.

HYPOTHESES OF THE STUDY

- There is no significant difference between boys and girls of the higher secondary school students studying in Salem district in their Self-concept.
- There is no significant difference between science and arts group higher secondary school students studying in Salem district in their Self-concept.
- There is no significant difference among Government, Aided and Self finance higher secondary school students studying in Salem district in their Self-concept.
- There is no significant difference among pure boys, pure girls and Co-Education Higher secondary school students studying in Salem district in their Self-concept.

METHODOLOGY

SAMPLING

The investigator has adopted simple random sampling method for obtaining data from 240 higher secondary students' as samples studying in 2 Government, 2 Aided and 2 self-finance schools.

TOOLS USED

Self-concept scale by Dr.Mukta Rani Rasthogi (1979) was used to collect the data. The data's were collected and analyzed with appropriate statistical techniques such as Mean, S.D, t-test and ANOVA.

DATA ANALYSIS

Findings based on the hypotheses and followed by data analysis are given as follows:

Table-1

Difference in Self-Concept of Higher secondary School Students with reference to gender

Variables	N	Mean	S.D	t	0.05 Level of significance
Boys	150	124.75	9.31	4.43	Significant
Girls	90	132.15	14.06		

From the table 1, it is clear that the calculated t- value 4.43 is greater than the table value of 1.96 at 0.05 level of significance. Hence, the null hypothesis is not accepted. Thus, there is significant difference between Boys & Girls in their self-concept at higher secondary level in Salem district. 't'- test reveals that the

girls (M = 132.15) are better than the boys (M = 124.75) in their Self-concept. This is due to the fact that girls are given much more importance than the Boys in both family and society. Now they get equal opportunities and they occupy high positions in almost all fields.

Table-2

Difference in Self-Concept of Higher secondary School Students with reference to group of subjects

Variables	N	Mean	S.D	t	0.05 Level of significance
Arts	62	123.67	4.9	6.2	Significant
Science	178	132	15.8		

From the table 2, it is clear that the calculated t- value 6.2 is greater than the table value of 1.96 at 0.05 level of significance. Hence, the null hypothesis is not accepted. Thus, there is significant difference between Boys & Girls in their self-concept at higher secondary level in Salem district. 't'- test reveals that

the Science group students (M = 132) are better than the Arts group students (M = 123.67) in their Self-concept. This is due to the fact that Science students concentrate more on their studies and the teachers may also harness their efforts to reach the desired aims and goals.

Table-3
Difference in Self-Concept of Higher secondary School Students with reference to types of schools

Nature of schools	Mean	SSb	SSw	df	Calculated 'F' Value	Table value	0.05 Level of significance
Govt	122.5	702.33	2857	2,237	29.4	3.04	Significant
Aided	129.25						
Self finance	135.75						

From Table 3, it is clear that the calculated 'F' value is greater than the table value at 0.05 level of significance. Hence, the null hypothesis is not accepted. Thus, there is significant difference among government, aided and self-finance school students in their self-concept at higher secondary level. 'F'- test reveals that the Self finance school students (M = 135.75) are

better than the Aided school students (M = 129.25) and Government school students (M = 122.5) in their Self-concept. This is due to the fact that the students from unaided school students have sound financial assistance to meet their basic needs and they concentrate more on their studies. They may have adequate freedom and motivation for their learning.

Table-4
Difference in Self-Concept of Higher secondary School Students with reference to nature of schools

Nature of schools	Mean	SSb	SSw	df	Calculated 'F' Value	Table value	0.05 Level of significance
Boys	116.71	809.97	2749.36	2,237	34.73	3.04	Significant
Girls	128.5						
Co-edn.	142.29						

From Table 4, it is clear that the calculated 'F' value is greater than the table value at 0.05 level of significance. Hence, the null hypothesis is not accepted. Thus, there is significant difference among pure boys, pure girls and Co-education school students in their self-concept at higher secondary level. 'F'- test reveals that Co-education school students (M = 142.29) are better than the Girls school students (M = 128.5) and Boys school students (M = 116.71) in their Self-concept. This is due to the fact that there is a mutual understanding between the boys and girls in the co-education schools which improves the Self-concept of both boys and girls.

FINDINGS

- ❖ There is significant difference in self-concept of higher secondary school students with reference to the gender.
- ❖ There is significant difference in self-concept of higher secondary school students with reference to the Group of study.
- ❖ There is significant difference in self-concept of higher secondary school students with reference to the Types of schools.
- ❖ There is significant difference in self-concept of higher secondary school students with reference to the Nature of schools.

DISCUSSION

Research performed over the years has suggested that there is a relationship between self-concept and academic achievement in higher secondary and secondary students. Society plays a dominant role in shaping self-concept of a person. Self is in fact a complex whole, which consists of several parts and sub-parts which have functional inter-relationship. Self is not an inborn quality; it develops gradually as a result of social interaction. It is the totality of attitudes, judgment and values of an individual relating to his behaviors, abilities and qualities. Marsh and Craven (1997) claimed that academic self-concept and achievement are mutually reinforcing constructs, each leading to gains in the other. Enhancing self-concept is a vital goal in and of itself and that self-concept is an important mediating variable that causally impacts on a variety of desirable outcomes including academic achievement (Marsh and Craven, 1997).

EDUCATIONAL IMPLICATIONS

In general, it may be said that the teacher should identify children with low academic achievement, poor home environment and poor Self-concept and then should try to find what create such difficulties. This can be possible only through a personal attachment of the teachers to their students. The teacher should keep a good report with parents of the students also and give their

suggestions if any required to overcome the difficulties. In other words the teacher should help the students in all possible ways to develop self- concept and to increase academic achievement. To improve the self-concept of high school students, efforts must be taken by the teachers and parents to provide a good environment both inside and

outside the school. By this way, they will develop their self-concept which will further lead to understanding of their capabilities, strengths, weaknesses, interests, attitude, aptitude, emotions, knowledge etc. this will finally lead them to develop a high level of achievement motivation.

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ELEMENTARY TEACHERS PERCEPTION TOWARDS RIGHT OF CHILDREN TO FREE AND COMPULSORY EDUCATION (RTE) ACT, 2009

4

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INTRODUCTION

Adoption of Universal Declaration of Human Rights in 1948 paved the way for education to be formally recognized as the human rights. This has been recognized and got its due importance after a series of global human traits. International forums gave sufficient encouragement to different countries to consider education as human rights. These international events made many countries to think and go ahead and take the responsibility to provide free and compulsory primary education for all children in their countries. Education in India is provided by the public sector as well as private sector, with the control and funding coming from three levels central, state and local bodies. Under various articles of the Indian constitution, free and compulsory education is provided as a fundamental right to children below the age of 6 and 14. This has been done because aim of education is to promote personal development, strengthen respect for

human rights and freedoms, and enable individuals to participate effectively in a free society. Its aim is also to eliminate social evils like discrimination at all levels of the educational system and to set minimum standards and norms to improve quality. Education has social, economical, political and economic perspective.

RIGHT OF CHILDREN TO FREE AND COMPULSORY EDUCATION (RTE) ACT, 2009

The Right to Education Legislation in India has been a history in evolving from a directive principle to a fundamental right. In 1950, the Constitution articulated its commitment to education through its Directive Principles of State Policy. The 86th Amendment Act 2002, made three specific provisions in the constitution to the facilities and the realization of the free and compulsory education to children between the age of 6 and 14 years as a fundamental right. These

were (i) adding Article 21 A in part III (Fundamental Rights), (ii) modifying Article 45 and (iii) adding a new class (K) under Article 51 A (Fundamental duties) making the parent or guardian responsible for providing opportunities for education for their children between 6 and 14 years. In translating this into action, the 'Right of children to free and compulsory Education Bill' was drafted in 2005. Thus, the quality of elementary education was conceptualized with the 86th amendment (2002) via Article 21 A (Part III) which seeks to make free and compulsory education as a fundamental right for all children in the age group 6-14 years. The Act was introduced in Rajya Sabha in December 2008. It was passed in the Lok Sabha on 4th August, 2009 and the President gave his assent to it on 26th August 2009. The Act came into force on 1st April 2010 as a Fundamental Right in India.

Following features provide the basis of implementation of the RTE Act, 2009.

- Every child in the age group of 6-14 has the right to free and compulsory education in a neighbourhood school, till the completion of elementary education
- Private schools will have to take 25% of their class strength from the weaker section and the disadvantaged group of the society through a random selection process. Government will fund education of these children.

- No donation and capitation fee is allowed.
- No admission test or interview either for child or parents.
- No child can be held back, expelled and required to pass the board examination till the completion of elementary education.
- There is provision for establishment of commissions to supervise the implementation of the act.
- A fixed student and teacher ratio is to be maintained.
- All schools have to adhere to the rules and regulations laid down in this act, failing which the school will not be allowed to function. Three year moratorium period has been provided to schools to implement all that is required of them.
- Norms for teachers training and qualifications are also clearly mentioned in the act.
- All schools except private unaided schools are to be managed by School management Committees with 75% of parents and guardians as members.

RATIONALE FOR THE STUDY

This study throws a light on the perceptions of elementary teachers towards the Right of Children to Free and Compulsory Education Act. Child labour, literacy and poverty are the major problems faced in the developing country of ours. It is a major concern of

the teachers along with the society in catering to the needs of the children so as to reduce the dropouts and stagnation which could be a major problem for the children to dislike education. Thus, the teacher has a major role in educating the parents and the community regarding the education of the child. This study by the investigator attempts to bring out the perception of elementary teachers with regard to the Right to Education Act 2009. The results of this study can help in formulating new policies with regard to the Right of Children to Free and Compulsory Education Act (2009). Further, this study can be an eye opener for the future prospects of establishing new efforts to promote free education. Through such efforts, the universalisation of elementary education is possible. Thus, the problem under study was “**Elementary Teachers Perception towards Right of Children to Free and Compulsory Education (RTE) Act, 2009**”.

LITERATURE REVIEW

Lohani, S., Singh, R., & Lohani, J. (2010), studied ‘Universal primary education in Nepal: Fulfilling the right to education.’ The article examined the status of universal **primary education** in Nepal in the light of legal provisions, enrollment and completion trends, and the quality, and management, of **education**, including financing. **Devaraj, G., & Parthiban, G.** (2013) conducted a study titled as ‘Right to Education (RTE) Act: The missing

aspects (gaps) of RTE Act with reference to persons with disabilities.’ **Gadam, A.M.** (2013) conducted a study entitled as ‘Teacher Awareness of the Responsibility under Right to Free and Compulsory Education Act’. The result of the study showed significant impact of teacher’s experience and educational qualification on their awareness of the responsibility under RTE Act. **Lehwald, K.** (2014), investigated ‘In search of a right to free public education in Canada.’ The article examined the extent to which a right to free public education exists in Canada at the primary and secondary levels. **Manoharan, V., & Pazhanivelu, G.** (2015), together studied ‘Awareness among the prospective teachers towards the salient features of the Right of Children to Free and Compulsory Education (RTE) Act.’ **Tehelka, (2016)**, reported that Kerala first state in India to achieve 100% primary education, aims at educating those who were unable to complete their primary education through its literacy programme Athulyam, which is carried out in two phases.

OBJECTIVES OF THE STUDY

- To find out the result of elementary teachers perception towards RTE Act 2009, with its dimensions such as Availability, Accessibility, Acceptability and Adaptability.
- To find out the difference, if any, in teachers perception towards

RTE Act, 2009 in its dimensions such as Availability, Accessibility, Acceptability and Adaptability with respect to the variable; gender.

- To find out the difference, if any, in the perception of teachers towards RTE Act, 2009 in its dimensions such as Availability, Accessibility, Acceptability and Adaptability with respect to the variable; locality.
- To find out the difference if any, in the perception of teachers towards RTE Act,2009 in its dimensions such as Availability, Accessibility, Acceptability and Adaptability with respect to the variable; type of school.
- To find out the difference, if any, in teachers perception towards RTE Act,2009 in its dimensions such as Availability, Accessibility, Acceptability and Adaptability with respect to the variable; educational qualification.
- To find out the difference, if any, in teachers perception towards RTE Act,2009 in its dimensions

such as Availability, Accessibility, Acceptability and Adaptability with respect to the variable; years of teaching experience.

METHODOLOGY

The investigator has adopted descriptive survey method by which, stratified random sampling techniques were employed in the study. The investigator randomly selected 100 elementary teachers, by giving proper representation from Govt., Aided and self-financing schools in Nagercoil Educational District. ‘Teachers Perception Scale’, a self constructed likert type 5 points summated scale is used as tool for collecting data. Descriptive statistics such as mean, standard deviation, skewness, kurtosis and differential statistics of t-test and F test were used for data analysis.

DATA ANALYSIS AND INTERPRETATION

H_0 : Elementary teachers do not possess the perception towards RTE Act 2009, with its dimensions such as Availability, Accessibility, Acceptability and Adaptability.

Table 1

Descriptive Statistics					
	N	Mean	Std. Deviation	Skewness	Kurtosis
Accessibility	100	32.22	4.167	-.042	1.097
Adaptability	100	37.09	5.782	-1.076	.324
Acceptability	100	51.09	7.261	-.528	-.257
Availability	100	45.17	7.094	-.717	-.243

From the above table values indicate that elementary teachers do not possess high perception towards RTE Act 2009, with its dimensions such as Availability, Accessibility, Acceptability and Adaptability. Only 32% of the teachers know about the accessibility factors of RTE Act, 2009. About 37% of the teachers possess knowledge about the adaptability aspects of RTE Act, 2009. Regarding the acceptability aspect of RTE Act, 2009, more than 50% elementary teachers know about it. About 45% of the teachers possess knowledge about the availability aspects of RTE Act, 2009. It means that the

perception in various aspects of RTE Act, 2009 is considered as necessary information by most of the elementary teachers. It is therefore, the null hypothesis; ‘Elementary teachers do not possess the perception towards RTE Act 2009, with its dimensions such as Availability, Accessibility, Acceptability and Adaptability’ is tenable.

H₀2: There is no significant difference between the mean scores of male and female teacher’s perception towards RTE Act, 2009 with its dimensions such as Availability, Accessibility, Acceptability and Adaptability.

Table 2

Difference between male and female teachers perception towards RTE Act, 2009

Variable (Gender)	Male			Female			t-value	5% level of significance
	N	Mean	SD	N	Mean	SD		
Accessibility	59	31.58	4.42	41	33.15	3.62	.055	NS**
Adaptability	59	37.08	5.61	41	37.10	6.09	.992	NS**
Acceptability	59	50.95	7.42	41	51.29	7.11	.816	NS**
Availability	59	45.07	7.58	41	45.32	6.42	.860	NS**

(*S-significant, **NS-not significant)

The calculated ‘t’ value of the mean basis of gender are 0.055, .992, .816 perception scores of teachers on the and .860 which is less than the table

value at 0.05 level of significance, and it is generalized that gender has no effect on the mean perception scores of teachers towards RTE Act, 2009. It is therefore, the null hypothesis, 'There is no significant difference between the mean scores of male and female

teachers perception towards RTE Act, 2009' is tenable.

H₀3: There is no significant difference between the mean scores of rural and urban teacher's perception towards RTE Act, 2009 with its dimensions such as Availability, Accessibility, Acceptability and Adaptability.

Table 3

Difference between rural and urban teachers perception towards RTE Act, 2009

Variable (Locality)	Rural			Urban			t-value	5% level of significance
	N	Mean	SD	N	Mean	SD		
Accessibility	54	31.37	4.19	46	33.22	3.94	.026	NS**
Adaptability	54	36.35	6.02	46	37.96	5.43	.168	NS**
Acceptability	54	49.83	6.88	46	52.57	7.49	.060	NS**
Availability	54	45.04	6.89	46	45.33	7.39	.840	NS**

(*S-significant, **NS-not significant)

The calculated 't' value of the mean perception scores of teachers on the basis of locality are .026, .168,.060 and .840 which is less than the table value at 0.05 level of significance, and it is interpreted that locality has no effect on the mean perception scores of teachers towards RTE Act, 2009. It is therefore, the null hypothesis; 'There is no significant difference between the

mean scores of rural and urban teachers perception towards RTE Act, 2009' is tenable.

H₀4: There is no significant difference between the mean scores of secondary grade and graduate teachers perception towards RTE Act, 2009 with its dimensions such as Availability, Accessibility, Acceptability and Adaptability.

Table 4

Difference between secondary grade and graduate teachers perception towards RTE Act, 2009

Variable (Designation)	Secondary Grade			Graduate			t-value	5% level of significance
	N	Mean	SD	N	Mean	SD		
Accessibility	45	32.60	4.42	55	31.91	3.96	.412	NS**
Adaptability	45	37.38	6.46	55	36.85	5.22	.655	NS**
Acceptability	45	51.04	7.46	55	51.13	7.17	.955	NS**
Availability	45	44.64	7.67	55	45.60	6.63	.506	NS**

(*S-significant, **NS-not significant)

The calculated ‘t’ value of the mean perception scores of teachers on the basis of educational qualification are .412, .655, .955 and .506 which is less than the table value at 0.05 level of significance, and it is interpreted that teacher’s educational qualification has no effect on the mean perception scores towards RTE Act, 2009. It is therefore, the null hypothesis; ‘There is no significant difference between the mean

scores of secondary grade and graduate teachers perception towards RTE Act, 2009’ is tenable.

H₀5: There is no significant difference among the mean scores of Govt., Aided and Self-financing school teachers perception towards RTE Act, 2009 with its dimensions such as Availability, Accessibility, Acceptability and Adaptability.

Table 5

Difference among Govt., Aided and Self-financing school teachers perception towards RTE Act, 2009

Variable (Type of School)	Source of variation	Sum of squares	df	Mean Square	F Value	Level of significant at 0.05 level
Dimensions						
Accessibility	Between groups	14.827	2	7.413	.422	NS**
	Within groups	1704.333	97	17.570		
	Total	1719.160	99			

Variable (Type of School)	Source of variation	Sum of squares	df	Mean Square	F Value	Level of significant at 0.05 level
Dimensions						
Adaptability	Between groups	170.080	2	85.040	2.627	S*
	Within groups	3140.110	97	32.372		
	Total		99			
Acceptability	Between groups	293.864	2	146.932	2.893	S*
	Within groups	4926.326	97	50.787		
	Total	5220.190	99			
Availability	Between groups	446.059	2	223.030	4.769	S*
	Within groups	4536.051	97	46.763		
	Total	4982.110	99			

(*S-Significant **NS-Not Significant)

The calculated F value of the mean perception scores of teachers on the basis of their type of school are 0.422, 2.627, 2.893 and 4.769 which is greater than that of the table value at 0.05 level of significance except the Accessibility value of 0.422, and it is interpreted that type of the institution has some effect on the mean perception scores of teachers towards RTE Act, 2009. It is therefore, the null hypothesis, 'There

is no significant difference among the mean scores of Govt., Aided and Self-financing school teachers perception towards RTE Act, 2009' is rejected.

H₀6: There is no significant difference among teachers perception towards RTE Act, 2009 with its dimensions such as Availability, Accessibility, Acceptability and Adaptability as per their years of teaching experience.

Table 6
Difference among Teachers Perception towards RTE Act, 2009
as per the variable; Years of Experience

Variable (Years of Experience)	Source of variation	Sum of squares	df	Mean Square	F Value	Level of significant at 0.05 level
Dimensions						
Accessibility	Between groups	50.210	2	25.105	1.459	NS**
	Within groups	1668.950	97	17.206		
	Total	1719.160	99			

Variable (Years of Experience)	Source of variation	Sum of squares	df	Mean Square	F Value	Level of significant at 0.05 level
Dimensions						
Adaptability	Between groups	71.915	2	35.958	1.077	NS**
	Within groups	3238.275	97	33.384		
	Total	3310.190	99			
Acceptability	Between groups	310.827	2	155.413	3.071	S*
	Within groups	4909.363	97	50.612		
	Total	5220.190	99			
Availability	Between groups	481.373	2	240.686	5.187	S*
	Within groups	4500.737	97	46.399		
	Total	4982.110	99			

(*S-Significant **NS-Not Significant)

The calculated F value of the mean perception scores of teachers on the basis of their years of experience is 3.071 and 5.187 which is greater than that of the table value at 0.05 level of significance, whereas the calculated F value of 1.459 and 1.077, which is less than the table value. Hence, it is interpreted that teaching experience of teachers has some effect on the total mean perception scores of teachers towards RTE Act, 2009. It is therefore, the null hypothesis, 'There is no significant difference among teachers perception towards RTE Act, 2009 with respect to the variable; Years of Experience' is partially tenable and partially rejected.

FINDINGS OF THE STUDY

1. Elementary teachers do not possess the perception towards RTE Act 2009, with its dimensions such as Availability, Accessibility, Acceptability and Adaptability.
2. There is no significant difference between the mean scores of male and female teacher's perception towards RTE Act, 2009.
3. There is no significant difference between the mean scores of rural and urban teacher's perception towards RTE Act, 2009.
4. There is no significant difference between the mean scores of secondary grade and graduate

teachers perception towards RTE Act, 2009.

5. There is significant difference among the mean scores of Govt., Aided and Self-financing school teachers perception towards RTE Act, 2009.
6. There is some significant difference found among prospective teachers perception towards RTE Act (dimensions of Availability, Adaptability and Accessibility) with respect to the variable; years of experience.

CONCLUSION

The purpose of any research is to find solution scientifically for the problem related to education, society etc. The investigator has chosen the

perception of teachers towards RTE Act 2009 which is very sufficient in this present educational scenario. This Act made revolutionary changes in the traditional system by making the education up to 14 years of age for every child as a fundamental right in India. Every individual, irrespective of race, gender, nationality, ethnic or social origin, religion or political preference, age or disability, is entitled to get free and compulsory elementary education. The provisions as stated in the RTE act are still out of reach to the children. To overcome this situation people have to be made aware of the RTE ACT 2009. Through this study we can also understand the progress of RTE ventures after the implementation of this act in April 1, 2010.

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IMPACT OF COMPUTER ADDICTION ON HEALTH OF STUDENTS

5

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INTRODUCTION

It is observed that proper physical health is essential for healthy mind, so to have good soul of students, their body deserved to be in the healthy state. WHO had defined health as “Good health does not confine itself with physical conditions free of all ill health or anemic state but it refers to better state of physical, mental & social well-being”. Thus health can be considered in two aspects, physical health & mental health. A person possessing sound mental & physical health can adjust well to the environmental situations and interpersonal relations. Such a person has clear self-concept, accepts his limitations & he does not blame others for his deficiencies. When he meets with the conflict, he tries to solve it on sound basis. He develops tension-tolerance and does not get disturbed in moments of distress.

The foremost concern of education today is to produce physically & mentally healthy persons & thereby well-adjusted personalities because physically & mentally healthy person are the real

assets of the society for 21st century. When something shocking happens, attention is immediately focused on the need for doing something about physical & mental health in our school. Thus for the development of society, it is the teacher who can teach physical & mental hygiene to the children in the class which in turn can maintain good physical & balanced mental health. Thus the physical & mental health of teachers & students is the most important topic of the day. Physical & mental health is not recognized as important and an integral part of the school program.

Secondary level education is the gateway for higher education in the life of students. So, students at this stage have good physical as well as mental health in order to achieve the goal of education. Good health of students essential for their continued educational growth and for creating a good emotional climate in the school where they spend many hours. Good health often has a bearing on making the right decisions & poor health may cause ineffective personality development &

over all achievement. The students have to associate with the teachers, peers, parents & community at large for their successful achievement. They need a stress free environment and good health to fulfill their responsibilities. Their mind should be stress free and fresh.

The wide spread adoption of digital technologies has ushered in drastic changes in human life. In digitalization, the tempo of fast life & living as consequence of scientific & technological development and advancement has generated tension oriented life situation & anxiety arousal behavior patterns, threats generated by stressful condition of life has an adverse impact on health and quality of life. Mental and physical illness is increased day by day. There are so many reasons behind it. The main reason is use of advanced technologies like computer, mobile, internet etc. Highly use of internet on computer or mobile messaging, chatting, video viewing, gaming etc. called computer addiction (CA). Computer addiction (CA) can be described as the excessive or compulsive use of computer which persists despite serious negative consequences for personal, social or occupational functions. Block stated that conceptually, the diagnosis is a compulsive-impulsive spectrum disorder that involves online and/or off-line computer usage & consists of at least three subtypes viz excessive gaming, sexual preoccupation and email/text

messaging. Teenagers might indulge in illegal activities like downloading illegal software, gain access to pirated files, hacking & cracking other internet user's computer or even company system to spread viruses. Out of curiosity for having fun, some skilled kids might fall in wrong company & may start doing what they think is harmless of simply mischievous, indulge in hacking or use other profile & try to do activities that might put them at risk on violating laws. It is observed that the child from one year old handle the mobile phone and he has strong attraction towards mobile. The child of two/three years old handle the mobile very easily, downloads video & Games, plays game, views the videos for hour and hour and if not like then delete it.. The school going children also play with computer, internet, what sup, face book, chats. The adolescents play very dangerous games like blue veils and suicide. It is strongly opined that there is a necessity to identify the prominence of computer addiction among the students & their health. If there exist such vulnerable computer addiction among students, their behavior is too questionable. So, it is the right time to identify those things for evolving suitable strategies for overcoming computer addiction and improving their health which improve the academic achievement and scholastic performance of the students. Hence, the study was undertaken.

OPERATIONAL DEFINITIONS

Computer Addiction (CA):

Mobile can be considered as one type of computer. In present study computer addiction is termed as excessive use of computer, internet and mobile. Computer Addiction (CA) is recognized by person's heightened & habituated need for computer, internet and mobile.

Physical Health (PH):

Physical health can be defined as a state of wellbeing when all internal and external body parts, organs, tissues and cells can function properly as they are supposed to function. It is a state of physical wellbeing in which a person is physically fit to perform their daily activities without restrictions. Maintains of physical health is based on natural interaction with the environment that include such fundamental qualities as sleep, diet, air and water. It refers to a person free from ill health or anemic state. Internal body functions of a person are regular, dynamic, energetic and good in condition. The person can do the work easily, enthusiastically without exhaustion.

Mental Health (MH):

Mental health can be conceptualized as a state of wellbeing in which the individual realizes his/her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, as is able to a contribution

to his/her community. In this positive sense, mental health is the foundation for wellbeing and effective functioning for an individual and for a community. According to Hadfield, Mental Health is the full & harmonious functioning of the whole personality.

OBJECTIVES

1. To study the levels of computer addiction among secondary school students.
2. To study the impact of computer addiction on physical and mental health of students.

HYPOTHESES

1. There is no Computer Addiction (CA) among secondary school students.
2. There is no significant difference between physical health mean scores of students in relation to level of computer addiction.
3. There is no significant difference between mental health mean scores of students in relation to level of computer addiction.

SAMPLE

The sample selected for the present study consists of 180 higher secondary school students of Nagpur City by systematic random sampling method.

TOOLS

1. Computer Addiction Inventory:
Computer Addiction Inventory

was constructed by the researcher by considering the points, namely, use of computer, use of mobile, use of internet, messaging, chatting and gaming. It contains 40 items with five point rating scale as continuously, often, if needed, few times and rarely. Its face validity was checked by experts and reliability by test-retest method. The reliability coefficient is 0.81.

2. Positive Physical Health Inventory: It was constructed by the researcher on the basis of good health habits, balance diet, efficiency and lack of diseases. It contains 26 true or false

statements. Its face validity was checked by experts and reliability by test-retest method. The reliability coefficient is 0.73.

3. Positive Mental Health Inventory: Positive Mental Health Inventory standardized by Dr. C. D. Agashe & Dr. R. D. Helode was used. It contains 36 true or false statements. Its reliability coefficient is 0.723.

ANALYSIS & INTERPRETATION DATA

Hypothesis 1: There is no Computer Addiction (CA) among secondary school students.

Table 1:

Levels of Computer Addiction among Students

Level of Addiction	Score	Number of Students	Percentage	Mean	Standard Deviation
No Addiction	Below 26	08	4.44 %	24.88	0.35
Low Addiction	26 to 29	41	22.78 %	27.73	0.81
Moderate Level	30 to 35	87	48.33 %	32.16	1.32
High Level	Above 35	44	24.44 %	36.25	1.14

As seen from table 1, in the total sample, 22.78 % students have Computer Addiction (CA) at low level, 48.33 % students have Computer Addiction (CA) at moderate level and 24.44 % students have Computer Addiction (CA) at high level. Only 4.44 % have no CA. 48.33 % students have Computer Addiction (CA) at moderate level, they may cross the boundary easily

and will entered in high level CA. That is it can be said that, 72.77 % students were computer addicted. Therefore the hypothesis “There is no Computer Addiction (CA) among secondary school students” is rejected.

Hypothesis 2: There is no significant difference between physical health mean scores of students in relation to levels of computer addiction.

Table 2***‘t’ Ratio for Mean Difference in Physical Health with regards to Computer Addiction Levels***

Health	Group	No. of Students	Mean	Standard Deviation	‘t’ value	Significance
Mental Health	Low Level	41	28.73	3.79	2.47	Significant
	Moderate Level	87	26.75	5.04		
	Moderate Level	87	26.75	5.04	1.23	Not significant
	High Level	44	25.50	5.68		
	Low Level	41	28.73	3.79	3.10	Significant
	High Level	44	25.50	5.68		

From table 2, it is evident that the Mean & SD of physical health scores of students in low CA level are 28.73 & 3.79 whereas Mean & SD of physical health scores of students in moderate CA level are 26.75 & 5.04 respectively. The ‘t’ value is 2.47 which is significant at 0.05 level of significance. This indicates that physical health mean scores of low & moderate CA level differ significantly. So, the null hypothesis “There is no significant difference between physical health’s mean scores of students in low & moderate CA level” is rejected. It can be observed that the physical health status in low CA level students is better than that of moderate CA level students.

From above table, it is evident that the Mean & SD of physical health scores of students in moderate CA level are 26.75 & 5.04 whereas the Mean & SD of physical health scores of students in high CA level are 25.50 & 5.68

respectively. The ‘t’ value is 1.23 which is not significant even at 0.05 level of significance. This indicates that physical health mean scores of low & moderate CA level do not differ significantly. So, the null hypothesis “There is no significant difference between physical health’s mean scores of students in low & moderate CA level” is accepted. That means physical health status of students in moderate & high CA level is same.

From the same table, it is evident that the Mean & SD of physical health scores of students in low CA level are 28.73 & 3.79 whereas Mean & SD of physical health scores of students in high CA level are 25.50 & 5.68 respectively. The ‘t’ value is 3.10 which is significant at 0.01 level of significance. This indicates that physical health mean scores of low & high CA level differ significantly. So, the null hypothesis “There is no significant difference between physical

health's mean scores of students in low & high CA level" is rejected. It can be observed that the physical health status in low CA level students is better than that of high CA level students.

Hypothesis 3: There is no significant difference between mental health mean scores of students in relation to levels of computer addiction.

Table 3
't' Ratio for Mean Difference in Mental Health with regards to Computer Addiction Levels

Health	Group	No. of Students	Mean	Standard Deviation	't' value	Significance
Mental Health	Low Level	41	30.56	5.24	7.58	Significant
	Moderate Level	87	23.31	4.62		
	Moderate Level	87	23.31	4.62	0.53	Not significant
	High Level	44	23.86	4.15		
	Low Level	41	30.56	5.24	6.50	Significant
	High Level	44	23.86	4.15		

From Table 3, it is evident that the Mean & SD of mental health scores of students in low CA level are 30.56 & 5.24 whereas Mean & SD of mental health scores of students in moderate CA level are 23.31 & 4.62 respectively. The 't' value is 7.58 which is significant at 0.01 level of significance. This indicates that mental health mean scores of low & moderate CA level differ significantly. So, the null hypothesis "There is no significant difference between mental health's mean scores of students in low & moderate CA level" is rejected. It can be observed that mental health status in low CA level students is better than that of moderate CA level students.

From above table, it is evident that the Mean & SD of mental health scores of students in moderate CA level are 23.31 & 4.62 whereas the Mean & SD of mental health scores of students in high CA level are 23.86 & 4.15 respectively. The 't' value is 0.53 which is not significant even at 0.05 level of significance. This indicates that mental health mean scores of low & moderate CA level do not differ significantly. So, the null hypothesis "There is no significant difference between mental health's mean scores of students in low & moderate CA level" is accepted. That means mental health status of students in moderate & high CA level is same.

From the same table, it is evident that the Mean & SD of mental health scores of students in low CA level are 30.56 & 5.24 whereas Mean & SD of mental health scores of students in high CA level are 23.31 & 4.62 respectively. The 't' value is 6.50 which is significant at 0.01 level of significance. This indicates that mental health mean scores of low & high CA level differ significantly. So, the null hypothesis "There is no significant difference between mental health's mean scores of students in low & high CA level" is rejected. It can be observed that mental health status in low CA level students is better than that of high CA level students.

FINDINGS & DISCUSSION

From analysis & interpretation of data, the researcher found out that,

1. There is high level Computer Addiction (CA) among secondary school students.
2. The physical health status in low CA level students is better than that of moderate CA level students.
3. The physical health status of students in moderate & high CA level is same.
4. The physical health status in low CA level students is better than that of high CA level students.
5. The mental health status in low CA level students is better than that of moderate CA level students.
6. The mental health status of students in moderate & high CA level is same.
7. The mental health status in low CA level students is better than that of high CA level students.

The finding 1 occur due to the reason that the students have very much attraction of mobile and computer/ internet from childhood stage. With easy way of downloading games, ring tones, cartoons and videos become a hobby of students. Use of mobile & computer becomes their hobby and they indulge & enjoy with it. In some extent parents are also responsible for it. They appreciate it & feel admiration. The findings 2, 4, 5 & 7 occur due to the influence of viewing of internet and mobile in same place for a long time. Students focus eyes while watching the screen, strain the eyes. When parents do not permit to use the computer, they get irritated and become physically & mentally disturbed. The findings 3 & 6 are same due to somewhat same situation of addiction.

CONCLUSION

The findings revealed that the secondary school students are computer addicted and due to computer addiction their physical & mental health's break down. If the computer addiction increased day by day, in future they will have to face serious health problems. So, it is essential to aware them about these health problems.

EDUCATIONAL IMPLICATION

No one can deny the use of computer technology in our life. Use of digital technology became an integral part of an individual's daily life with requires to education and profession. The theoretical & practical knowledge of technology is must. It is very good and effective means for life but its use should be in limit. The digital technology

should be used for good & useful task not for evil or badly. The child as well as adults also have attraction of this technology, it is acceptable but over use is harmful to the health and ultimately to human being, society, and nation. Therefore, the orientation programs should be organized by schools, colleges and universities in the regard for students, teachers and parents.

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DO DIGITAL NATIVES AWARE ON DIGITAL TECHNOLOGY

6

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Digitalization is sweeping across every aspect of our daily lives. It has totally changed the educational industry and teaching learning process to a great extent. It has lessened the distance between students and their educational needs there by making education stress free. It has made the classroom atmosphere more interactive and participative. With the advent of internet, information and communication technology has open up new vistas for education like on line learning, e-learning, virtual classroom learning, offers a variety of online courses etc.

Technology contributes to the efficiency and effectiveness of education at all levels. The use of digital information in the educational environment has enabled easy access to many resources. Students must develop knowledge about how to use ICT Technology to construct meaning, but most importantly in ways that are appropriate to their needs. Thus technology is proving a disruptive influence in education. Hence each and

every student should be aware about these technological advancements. Today's students living in digital age called as "digital students" or "digital inmates" or "digital natives" are the pupils those who born after 1980 and those who born before 1980 are called digital immigrants. With technology moving so fast drastic changes has made in the field of education. Students should be tech savvy to cope up with the changing scenario. Being digital natives they are innately able in using smart phones, ipads, tablet computers etc. They must be aware about the recent digital technologies, digital terminologies etc. Without this knowledge one cannot live in this era. That much this age has proliferated with technology.

Through the present paper investigators made an attempt to find out the digital awareness among digital natives hailing from four generation groups-viz plus two students, degree students, post graduate students, doctoral students.

OBJECTIVES:

- a) To study the extent of digital awareness among digital natives.
- b) To find out whether there exist any significant difference among digital natives based on gender, locality, and subject.

METHODOLOGY:

Sample:

The study is carried out in a representative sample of 200 digital natives comprising 70 plus two students, 55 degree students, 58 post graduate students and 17 doctoral students of Thrissur, Palakkad, Kozhikode, Malappuram and Kannur districts. Survey method was adopted.

Description of the Tool:

Digital Awareness Self-Assessment Questionnaire prepared by the investigators was the tool used for the study. Questionnaire consists of 25 items measuring various aspects like awareness on Internet, newly developed softwares in mobile application, digital terminologies, about new digital technologies etc. Total score is 125.

Statistical Technique:

Percentage Analysis, Test of significance difference between means.

Analysis and Discussion

Data and result of above mentioned objectives are given in tables shown below

Table-1

Category	N	Mean	Standard Deviation
Plus two students	70	86.028	15.14
Degree students	55	82.783	15.95
Post Graduate students	58	85.98	15.19
Doctoral students	17	96.70	12.35
Total	200	86.02	15.48

a) Digital Awareness among digital natives based on category

Table 1 reveals that digital awareness among digital natives is found adequate as the mean score 86.02 is above the half

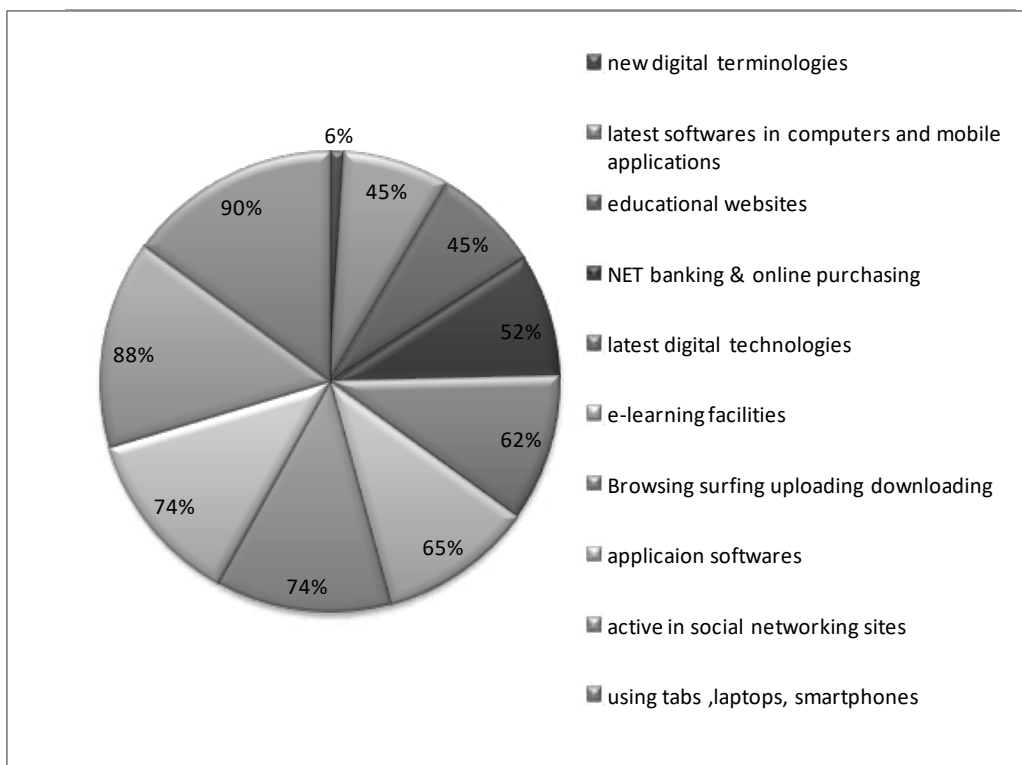
of the total score 125. An estimation of mean scores reveals digital awareness of doctoral students occupies first position followed by Plus two students, Post Graduate students and Degree students respectively.

b) Component wise analysis of Digital Awareness among digital natives

To get a clear picture of digital awareness, investigators carried

out component wise analysis of Digital Awareness Self-Assessment Questionnaire. Pie chart showing digital awareness among digital natives is given below

Pie Chart Showing the Digital Awareness of Digital Natives



The pie chart reveals the following:

- Only 6% of digital natives are aware about the new digital terminologies.
- 45% of digital natives update the knowledge of the latest softwares in computers and mobile applications.
- 45% of digital natives make use of exclusive educational websites.
- 52% of digital natives are aware about NET banking and online purchasing schemes.
- 62% of digital natives are aware about the latest digital technologies.
- 65% of digital natives make use of e-journals, utilize e-learning facilities etc.

- 74% of digital natives are aware about browsing, surfing, uploading, downloading etc.
 - 74% of digital natives are aware about the presentation softwares, spread sheets etc.
 - 88% of digital natives are active in social networking sites like Facebook, WhatsApp etc.
- 90% of digital natives use tablet computers, laptops, smart phones etc.
- c) Group Difference of Digital Awareness among digital natives based on gender**
- Group difference is found by means of t-test and it is given in table-2

Table-2

Data and result of test of significance of difference between means of Digital Awareness among Digital Natives based on Gender

Category	Gender	N	Mean	Standard Deviation	t-test
Plus two	Male	42	90.88	15.67	3.549
	Female	28	78.75	11.01	
Degree	Male	7	91.71	10.26	1.613*
	Female	48	81.46	16.29	
Post Graduate	Male	11	87.00	11.55	0.245*
	Female	47	85.74	16.03	
Doctoral	Male	6	101.67	10.96	1.243*
	Female	11	94.00	12.70	
Total	Male	66	91.30	14.41	3.47
	Female	134	83.42	15.38	

*not significant

From table 2, it is evident that male and female plus two students differ significantly in digital awareness as the obtained t value 3.549 is above 2.58 the required value of significance at 0.01 level. Digital awareness of male students is significantly higher than that of female students. It is also revealed that digital awareness of degree students, post graduate students and doctoral

students do not differ significantly as the obtained t values 1.613, 0.245 and 1.243 are below 1.96 the required value of significance at 0.05 level. Mean scores indicate that male students of this groups have more awareness than their female counterparts. It is also evident that male and female students of the total sample differ significantly in

digital awareness as the obtained t value 3.47 is above 2.58 the required value of significance at 0.01 level.

d) Group Difference of Digital Awareness among digital natives based on locality

Group difference is found by means of t-test and it is given in table-3

Table-3

Data and result of test of significance of difference between means of Digital Awareness among Digital Natives based on Locality

Category	Locality	N	Mean	Standard Deviation	t-test
Plus two	Rural	53	84.08	15.62	1.944*
	Urban	17	92.12	11.99	
Degree	Rural	43	80.28	16.35	2.269
	Urban	12	91.66	10.82	
Post Graduate	Rural	37	85.35	14.96	0.417*
	Urban	21	87.09	15.91	
Doctoral	Rural	10	96.00	10.69	0.273*
	Urban	7	97.71	15.28	
Total	Rural	143	84.09	15.73	2.837
	Urban	57	90.86	13.83	

*not significant

From table-3, it is found that the test of significant difference between means of digital awareness between rural plus two students and urban plus two students is 1.944, which is not significant at 0.05 level of significance. Also found that the test of significant difference

between means of digital awareness between rural degree students and urban degree students is 2.269, which is significant at 0.05 level of significance. Degree students from urban area have higher digital awareness than that of from rural area. The study also reveals,

the digital awareness of post graduate students and doctoral students based on locality, do not differ significantly as the obtained t values are below 1.96 the required value of significance at 0.05 level. It is also evident that rural and urban students of the total sample differ significantly in digital awareness as the

obtained t value 2.837 is above 2.58 the required value of significance at 0.01 level.

e) Group Difference of Digital Awareness among digital natives based on Subject

Group difference is found by means of t-test and it is given in table-4

Table-4

Data and result of test of significance of difference between means of Digital Awareness among Digital Natives based on Subject

Category	Subject	N	Mean	Standard Deviation	t-test
Plus two	Arts	30	91.10	15.77	2.519
	Science	40	82.23	13.64	
Degree	Arts	30	79.83	15.98	1.510*
	Science	25	86.28	15.49	
Post Graduate	Arts	32	86.19	15.44	0.113*
	Science	26	85.73	15.19	
Doctoral	Arts	5	93.60	11.43	0.657*
	Science	12	98.00	12.97	
Total	Arts	97	86.12	16.05	0.087*
	Science	103	85.93	14.99	

*not significant

From table-4, it is found that the test of significant difference between means of digital awareness between plus two arts students and plus two science students is 2.519, which is significant at 0.05 level of significance. Digital awareness of arts and science students

of degree, post graduate, doctoral level and the total sample do not differ significantly as the obtained t values 1.510, 0.113, 0.657 and 0.087 are below 1.96, the required value of significance at 0.05 level.

FINDINGS

- Digital awareness among digital natives is adequate.
- Digital awareness of doctoral students is significantly higher than that of other groups.
- Male digital natives have more digital awareness than that of their counter parts.
- Students from urban area have higher digital awareness than that of rural students.
- Digital natives lack awareness on new digital terminologies.
- Nearly half of digital natives are aware about NET banking online purchasing etc.
- Digital natives take advantage of educational websites and properly updating latest technologies are found less in number.
- A good number of digital natives are expert in dealing with e-devices like laptops, tabs, smart phones etc.

CONCLUSION

The study yield remarkable results. Digital natives possess adequate digital awareness. Among the four groups greater awareness of doctoral students indicates higher education contributes significantly to the digital knowledge. It can also be concluded that male students and urban students have good understanding of digital world. Digital knowledge and understanding of female students and rural students should be improved. Study also throws light on the subject of study does not contribute significantly to digital awareness of digital natives. A good number of digital natives are expert in dealing with e-devices like laptops, tabs, smart phones etc. Digital natives take advantage of educational websites and properly updating latest technologies are found less in number. Digital Information is essential to almost every aspect of modern life. That is there, is a need as never before, for students and teachers who are information literate in a digital context.

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PLAYING AND WATCHING VIDEOGAMES – IMPACT ON THE PROBLEM SOLVING AND PRO SOCIAL BEHAVIOUR OF MIDDLE SCHOOL STUDENTS

7

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INTRODUCTION

It is apparent that the significant presence of media, such as television and videogames has an effect on the lives of children and adolescence population. Most of the children spend a great deal of time by watching television and playing videogames (Polman, 2008). It was found that children spend an average of twenty five hour in a week and for watching the television and nine hour a week by playing videogames (Gentile *et al.*, 2004). It is evident that the children spend ten times more in such new media than they spend for reading. There are many studies which focussed on the violent nature of videogames and increasing the aggressive behaviour in children.

Over the years video gaming has received a lot of bad press. Earlier it was considered as only a tool that develops aggression among children. As many other researchers pitched to learn more about the effects of video gaming, the perception of it only having negative

effects has changed as they could found the positive effects also.

Now perceiving video gaming only as negative is less common. With the advent of more usage of Smart phones and Tablets, the number of users playing video games also increased on a regular basis. It has been proven that more than 50% of the gamers are now females. As many studies (Prot *et al.*, 2012) proven that video gaming improved the cognitive functioning (problem solving, reasoning and decision making), visual-spatial skills, eye hand coordination, prosocial behaviour etc., the society now appreciates video gamers. Off late the trend has been changed and the society perceive video gaming as an effective teacher that affect players in multiple domains. The rising popularity of video games has instigated a debate among parents, researcher, video game designer and policymakers concerning about the potential harmful or helpful effects of video games on children (Prot *et al.*, 2012). Views expressed in best

debate have often been extreme, either idealizing or vilifying video games delighting (Jack, 2008; Entertainment software association, 2011).

Correlates of Videogame Playing

From conception till eternity and from dawn till dusk, our world have a physical and psychological effects characterized by phenomena, events and processes. A game is any mental and / or physical activity that is defined by goals, rules, challenges, a feedback system and voluntary participation (Game & McGonigal, 2011; Prensky, 2001). A video game is a complex form of digital media that incorporate these gamic properties, acquired active interaction between human and computer (Galloway, 2006; Wadrip - Fruin, 2009).

Both games and video games train intellectual skills as well as improve physical skills and through learning in a meaningful context, i.e; skills learnt and applied in the games world, games utilize play and situated cognition on practical and relevant levels to affect and develop their players (Van Eck, 2006). Video games are the most popularized digital tool that measure quantitatively different physical and mental capacities, capabilities and characteristics. Video games help us to simulate and are the tools to test problem solving and decision making skills.

Cognitive Correlates of Video game Playing

Video games enhance different cognitive skills. Cognition is defined as the mental processes associated with memory, language, perception, attention, problem solving, decision making and reasoning (Goldstein, 2011). Video games create engaging environment that allowed for cognitive growth and development in mental rotational skills, object location ability, attention, visual attention, targeting, iconic and verbal representation of processes, verbal fluency, executive control and both short and long term memory skills (Boyan & Sherry, 2011).

Cognition develops through bottom up and top down processes. The bottom up process is input and data driven, which involves perceiving the world, remembering features and characteristics about it, navigating the environment. The top down process utilizes previously learned knowledge to affect perception, memory, problem solving, decision making and the like (Goldstein, 2011).

A video game player perceives and interacts by processing a bottom-up and top down approaches, in order, to win the game, the player must solve the problems and refer to various cognitive skills that can overcome obstacles and challenges.

Playing videogames favours the children and adolescence as it always support the executive functioning which improves the cognitive and perceptual abilities. Playing videogames will always put the participants into an active mode where in they take split second decisions, fast movements, changing tracks, forming a good deal of information at once. The abilities tapped by such mode acts as the basic building blocks of intelligence.

Cognition can be enhanced not only from action gamers but also from non action gamers. Cognitive improvements were not limited to action game training alone and different games enhanced different aspects of cognition. Training specific cognitive abilities frequently in a video game improve performance in task that share common underlying demands. Many video games related cognitive improvements may not be due to training of general broad cognitive systems such as executive attentional control, but instead due to frequent utilization of specific cognitive processes during game play. Henceforth, many video game training related improvements to cognition may be attributed to near transfer effects (Oei & Patterson, 2013). Video game experience highlights a greater cognitive flexibility. The executive functioning mainly cultivates through video gaming are shifting, inhibition and updating.

Playing video games can be characterized by a positive effect on brain organisation and cognitive functioning for people who have intense experience in video gaming. In an educational context, potential effects of video gaming has consequences notary on an individual level but also on the mental states of subjects on a global and societal level. On an intellectual level, video games gives an experience to improve system thinking that enhance a combination of multiple concepts that could offer benefits for learning maker which in turn increase the efficiency of educational system. Moreover the potential effects of videogames on the number of functions like attention and perception and its magnitude promote the cognitive as well as societal changes.

Chiappi (2013) found that videogames improve the skill of multitasking simultaneously which improve people's abilities to switch on rapidly without making any error (Anderson *et al.*, 2010; Green *et al.*, 2012; Colzato *et al.*, 2014). Action games improved performance in a test of the ability to refrain from responding to non target stimuli, in a situation in which most stimuli called for a response but an occasional stimulus called for no stimulus (Dye, Green, Bavelier, 2009). There are many long lasting positive effects of videogames on the basic mental processes. These mental

processes or the cognitive correlates include perception, attention, memory, problem solving and decision making.

In Sum, the current research is to find out whether the active involvement (Playing videogames) leads to problem solving or pro social behaviour than while passively involved (Watching videogames).

Method

Experimental Research Design

The research adopted an experimental pre-post test design, in which tools were employed for the pre test assessment on classroom attention, problem solving and pro social behaviour of the selected children as a first stage. In the second stage, there were two experimental groups and one control group in which one child will play (active stage – Experimental Group I) videogames of different concepts and different levels and the other child will watch (passive stage Experimental Group II) when other play the videogames, the control group is not assigned to watch any videogames. In the third stage, post test assessment is taken.

Participants Section

Population

In the present study the population consisted of all the middle school children belonging to the age group 10-13 years. This was the population,

to which the researcher wanted to generalize the results of the present study.

Participants

Participants are a subset of people selected from a larger population for the purpose of analysis and making inferences. The participants selected for the present study were middle school children between the age group 10 to 13 years. The total number of participant selected were forty five boys and forty five girls from different sections of grade 5, 6 and 7. From the selected participants 50 percent of them were from grade five, 36 percent were from grade six and 14 percent were from grade seven. Most children were 10 years old ($n = 45$), several 11 year olds ($n = 28$), 12 year olds ($n = 15$) and 13 year olds ($n = 2$).

Procedure

Researcher after fixing the samples to be used in the study, has approached different schools seeking permission to get middle school students who study in grade 5, 6 & 7 between the age group 10-13 years. The researcher approached the principals of seven schools in Krishnagiri district and requested for ninety students for the experimental and control group which belongs to grade 5, 6, & 7. The researcher explained the experimental design and the purpose of the study in depth and also clearly stated that selection of the samples is strictly to

the exclusion and inclusion criteria. The researcher mentioned the requirements of school computer lab for the study and seek permission it. The permission seeking were for 21 continuous days in order to see a behavioural change among the sample been selected. Most of the schools denied to give permission for 21 continuous days as it may affect the completion of the syllabus.

After seeking permission from the principal of the school, the researcher was taken to classes of grade 5, 6, & 7 and to different sections of it. The researcher explained the study and selected the students based on the exclusion and inclusion criteria. Many students were interested, but most of them got excluded in order to meet the exclusion and inclusion criteria used for the study. Selected students were given appropriate and detailed instruction about the study and clearly mentioned the purpose of the study. There were Ninety participants who have been selected for the study. The participants selected were divided into three groups based on gender, out of which forty five were boys and forty five were girls. After dividing them into gender wise they were further divided into groups of three, of which experimental group I will be playing (active stage) the videogames and experimental group II will be watching (passive stage) the videogames and control group will not

be given any videogames. The researcher has taken the pre test from all these three groups given certain specified videogames that has problem solving and pro social behaviour content for experimental group I to actively play and experimental group II to watch the videogames while the other group is playing and no videogames is given to the control group. After the completion of 21 days, the post test assessment in taken from all the three groups.

Apparatus

The researcher used twenty five desktop computers with the key boards given in the computer lab to show videogames of different content and different levels of difficulty. Speakers were also used for the purpose of study. Different videogames were used to measure the effects of playing and watching videogames on the classroom attention, problem solving and pro social behaviour.

Materials

The researcher employed three questionnaires for the study which will be used in the pre assessment and post assessment level of the experiment. The questionnaires used were adopted a Likert scale method. The questionnaires used for the study were Classroom Attention Scale, Problem solving Scale and Pro social Behaviour Scale. The researcher has developed the tool.

Results

The hypothesis framed is that there is a significant difference between the

Pre test and Post test of Experimental I group (Playing Video games) with regard to Problem Solving. Paired sample t-test is used for the analysis.

Table 1.1.

Comparing Means Scores of Problem Solving between Pre test and Post test of Experimental I Group

Paired Sample t-test

Group	Mean	SD	t-value	df	Sig (2-tailed)
Pre test	39.27	3.413	53.003	29	0.000
Post test	105.77	6.867			

Table 1 shows a significant difference in the mean scores between pre test and post test group of Experimental Group I (Playing Videogames) with regard to the Problem Solving. Results indicated that the mean scores for pre test is 39.27 and for post test is 105.77 and SD for pre test is 3.413 and for post test is 6.867 with

t- value 53.003 for df 29 at 0.000 level of significance. The second hypothesis framed is that there is a significant difference between the Pre test and Post test of Experimental I group (Playing Video games) with regard to Pro social Behavior. Paired sample t-test is used for the analysis.

Table 1.2.

Comparing Means Scores of Pro social Behavior between Pre test and Post test of Experimental I Group

Paired Sample t-test

Group	Mean	SD	t-value	df	Sig (2-tailed)
Pre test	36.87	4.681	51.092	29	0.000
Post test	102.07	6.125			

Table 2 shows a significant difference in the mean scores between pre test and post test group of Experimental Group I (Playing Videogames) with regard

to the Pro social Behavior. Results indicated that the mean scores for pre test is 36.87 and for post test is 102.07 and SD for pre test is 4.681 and for post

test is 6.125 with t- value 51.092 for df 29 at 0.000 level of significance. The third hypothesis framed is that there is a significant difference between the

Pre test and Post test of Experimental II group (Watching Video games) with regard to Problem Solving. Paired sample t-test is used for the analysis.

Table 1.3.

Comparing Means Scores of Problem Solving between Pre test and Post test of Experimental II Group

Paired Sample t-test

Group	Mean	SD	t-value	df	Sig (2-tailed)
Pre test	34.30	3.743	1.040	29	0.307
Post test	31.20	16.327			

Table 3 shows no significant difference in the mean scores between pre test and post test group of Experimental Group II (Watching Videogames) with regard to the Problem Solving. Results indicated that the mean scores for pre test is 34.30 and for post test is 31.20 and SD for pre test is 3.743 and for post

test is 16.327 with t- value 1.040 for df 29 at .307 level of significance. The fourth hypothesis framed is that there is a significant difference between the Pre test and Post test of Experimental II group (Watching Video games) with regard to Pro social Behavior. Paired sample t-test is used for the analysis.

Table 1.4

Comparing Means Scores of Pro social Behavior between Pre test and Post test of Experimental II Group

Paired Sample t-test

Group	Mean	SD	t-value	df	Sig (2-tailed)
Pre test	37.50	4.183	1.825	29	0.078
Post test	31.50	17.514			

Table 4 shows no significant difference in the mean scores between pre test and post test group of Experimental Group II (Watching Videogames)

with regard to the Pro social behavior. Results indicated that the mean scores for pre test is 37.30 and for post test is 31.50 and SD for pre test is 4.183 and

for post test is 17.514 with t- value 1.825 for df 29 at 0.078 level of significance. The fifth hypothesis framed is that there is no significant difference between the

Pre test and Post test of Control group (Neither Playing/Watching) with regard to Problem Solving. Paired sample t-test is used for the analysis.

Table 1.5

Comparing Means Scores of Problem Solving between Pre test and Post test of Control Group (Neither Playing/Watching)

Paired Sample t-test

Group	Mean	SD	t-value	df	Sig (2-tailed)
Pre test	36.67	9.308	1.340	29	0.191
Post test	30.33	23.084			

Table 5 shows no significant difference in the mean scores between pre test and post test group of Control Group (Neither Playing/Watching) with regard to the Problem Solving. Results indicated that the mean scores for pre test is 36.67 and for post test is 30.33 and SD for pre test is 9.308 and for

post test is 23.084 with t- value 1.340 for df 29 at .191 level of significance. The sixth hypothesis framed is that there is no significant difference between the Pre test and Post test of Control group (Neither Playing/Watching) with regard to Pro social Behavior. Paired sample t-test is used for the analysis.

Table 1.6

Comparing Means Scores of Pro social Behavior between Pre test and Post test of Control Group (Neither Playing/Watching)

Paired Sample t-test

Group	Mean	SD	t-value	df	Sig (2-tailed)
Pre test	45.37	21.427	1.321	29	0.197
Post test	36.13	27.270			

Table 6 shows no significant difference in the mean scores between pre test and post test group of Control Group (Neither Playing/Watching)

with regard to the pro social Behavior. Results indicated that the mean scores for pre test is 45.37 and for post test is 36.13 and SD for pre test is 21.427 and

for post test is 27.270 with t- value 1.321 for df 29 at .197 level of significance.

Discussion

The result shows that there is a significant difference in the Experimental group I with regard to problem solving for the participants who played the videogame. McGonigal (2015) suggest that certain mainstream games like call of duty and other related videogames can be the powerful tools to improve one's attention, mood, cognitive strengths and relationships. Many of the research findings slowly try to change people's conception of videogames as the findings mentions the positive outcomes of videogames such as improvement in the problem solving skills, cognitive abilities etc. Shute *et al.*, (2014) found that videogames geared toward entertainment can improve attention, spatial orientation and problem solving abilities. The children develop problem solving skills as they play videogames more and more due to the simulation effects of the same which gives a reality effect and thereby gaining mastery over it.

Very few researches have been done to highlight the effects of videogames on the pro social behaviour, Gentile *et al.*, (2009) compared to participants who had played either the neutral or the violent video games, participants who had played the pro social video game shows significantly lower levels

of aversive noise, thereby indicating lower levels of aggressive behaviour. Moreover, these results remained significant even after controlling for levels of trait altruism, aggression, arousal and mood. Whitaker and Bushman (2012) examined the effects of videogames on pro social behaviour and also on positive mood. The study compared to participants who have played either the neutral or the violent video game, participants who had played the relaxing video game reported greater positive effect and displayed greater helping behaviour and there was a mediation effect of positive mood also. Saleem, Anderson & Gentile (2012) found out that the pattern of increased helping behaviour after playing a pro social video game has been consistently demonstrated. Whitaker and Bushman (2012) study shows that those who had played the pro social video game choose significantly less difficult puzzles for their partner to complete than did those who have played either the neutral or the violent video game.

As they were not actively or physically playing the videogames the skill of problem solving that developed in the playing participants was not seen in the participants who were watching the videogame played by the others. The passive group or watching participants were stressful as they were not allowed to take the moves because they were a passive observant.

Inculcating problem solving skills through games requires analytical, creative and logical thinking that the passive participant is not practiced as they were mere observers. So the steps while playing a videogame the rule or strategies developed by oneself like evaluating the problem, managing the problem, decision making resolving a problem and the outcome of it is not been practised by the passive observers. As they were not actively or physically playing the videogames the skill of Pro social Behavior that developed in the playing participants was not seen in the participants who were watching the videogame played by the others. The passive group or watching participants were stressful as they were not allowed to take the moves because they were a

passive observant. The current research has found out that pro social behaviour is developed in the players who were actively playing and not for the passive players this could be due to the time constrain and the involvement that the passive players lack. The researcher is not claiming for the causality that spending more time and if actively played the pro social skills will develop, it is the result that the study showed. The control groups were given the scales as a pre test and after which they have not been distracted in any ways after a gap of three weeks the post test evaluation is taken which showed no significant difference in the effectiveness of videogames with regard to problem solving and pro social behavior.

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