

Role of ICT in developing sustainable 21ST CENTURY SKILLS among higher education students

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ABSTRACT

The 21st century skills are the skills set which consists of life skills, non cognitive skills, workforce skill, and interpersonal skill. National central regional educational laboratory (US) found out 21st century skill as digital literacy, inventive thinking, higher order thinking and effective communication. The objective of education for sustainable development is to provide opportunity for humans to obtain knowledge, skills, attitudes and values needed for shaping sustainable future. To comfort with automation, digitalization 54% of the world labours had to be re skilled or up skilled. Due to lack of 21st century skills students academic performance will be low as well probability of getting job is low. The study aims to analyze the impact of ICT to develop 21st century skills. The study reveals that the students possess good technological literacy. Students were lack in interpersonal skill. Girls and the students who use internet for many years has good 21st century competency. It is suggested to create learning environment that develops team building and interpersonal skill. Students should encourage coming up with new ideas and alternative ways to solve problem. Universities should focus to provide skill based curriculums through which students can develop competencies needed for our planet future and their life.

Key words: 21st century skills, higher education students, ICT, sustainability

INTRODUCTION

Today's job market requires 21st century competencies. 21st century competencies are higher order skills and abilities necessary for achievement in job and academic. To cope up with digital age students should have the knowledge what to do with the subject memorized. The objective of education for sustainable development is to provide opportunity for humans to obtain knowledge, skills, attitudes and values needed for shaping sustainable future. It promotes competencies like creativity, critical thinking, and collaboration. The constructivist learning environment helps to improve 21st century skills. National central regional educational laboratory (US) found out 21st century skill as digital literacy, inventive thinking, higher order thinking and effective communication. The skills included in inventive thinking are creativity, reasoning, curiosity. Creativity skills motivate the students to apply various approaches to problem solving, analyze multi dimensional construct and provide new solutions. Communication ability is needed compulsory for the students of information age. Interpersonal skills help the students for social interaction and to maintain relationship with others. As the demand of IT based workers increases digital literacy is one of the important competency. It is the ability to use, organize, access technology.

The evolution of 21st skills needed shift to technology learning environment from traditional (Cathy Lewin, Sarah Menicol 2015). ICT act as a mediator for changes in educational practices (Babitha Chaudry 2018). Studying in ICT environments students skills like higher order cognitive will be developed (Walimbia Miachel, Mayende Godfrey 2014). Globally 172 million people were unemployed (ILO 2019 report). To confort with automation, digitalization 54% of the world labours had to be re skilled or up skilled (Future of jobs 2018). One of the targets of sustainable development goal is to improve number of youth and adult who have relevant skills for employment by 2030. Global indicator 4.4.1 under sustainable development goal sG4 is proportion of youth and adult with ICT skills. National policy on education reenvisionised in 1992 shows the requirement of technology in education. This research mainly focuses to access the impact of ICT to develop 21st century skills among college students.

Statement of the problem

Due to technological advancement 21st century requires multiple skills within an individual. Poor skill direct to unstable, informal, low wage employment. The unemployment rate in India is 6.1% in FY 2017-18 which is higher in 45 years (NSSO report). As per HRD ministry nearly 2.9 million engineering graduate is releasing for labour market. Only 3 % of engineers have suitable skills (Aspring mind report). In India total workforce undergoing formal skill training is less than 5 % (MSMDE annual report 2016-17). In India there are 1 million cyber security professionals were needed but there is huge skill gap is present to achieve the demand (NASSCOM report).

Research objective

1. To analyze the impact of ICT to develop 21st century skills
2. To study various 21st century skills
3. To find out the relationship between creativity and decision making ability

LITERATURE REVIEW

The students should improve competencies which are important for our planet future and their life. They want to obtain broad variety of 21st century skills. (Kris Van den Branden 2015). The students should be prepared with skills, values which will make them for living sustainable life style in earth (David V. J. Bell 2016). The utilization of information and communication technology prepares students for workplace. ICT consists of radio, television; new technologies like internet will be a enabling tools to changes in educational practices (tino v.l 2003). ICT helps to construct new knowledge, form meaning of content and context of their own environment (anila jha 2017). The online learning will give a chance to learn anytime. The availability of internet provide simple way to get online content (rajesh tiwari, bimal anjum 2013)

Conceptual framework

The 21st century skills are the skills set which consists of life skills, non cognitive skills, workforce skill, interpersonal skill (silva 2009). In 21st century students should creative, able to solve problem, act in groups and produce digital artifacts (ester care et al 2018)

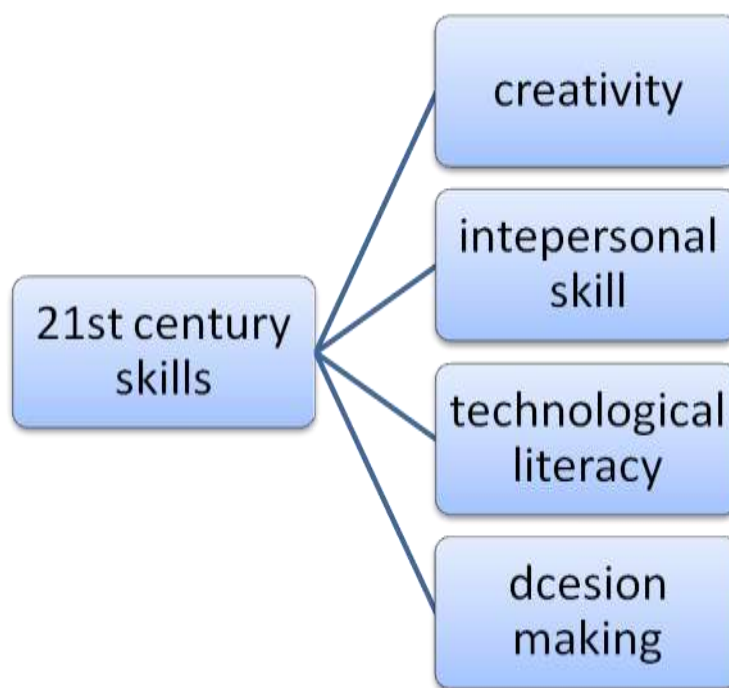


Figure 1: conceptual frame work

When the information's are send by two or more person, then the process is termed as interpersonal communication (Deepa sethi 2009). The person who possess good interpersonal ability will stood for their rights, provide various views to make organization effective (Anitke 2014). The interpersonal skill especially communication ability is important in this information era (Li nuzangh) in interpersonal skill verbal communication possess high level proficiency (mohd ajmal 2014).

Creativity in job is the way and output of attempts for developing and introiducing new and improved process of doing things (Neil anderson2012). To develop vital skills of 21st century like creativity and innovative skill the creative education should be given from elementary to higher education.(Tatiana de cassia nakena, solange muglia wechlser 2018) the

teachers need to encourage the students logical thinking ability during conceptual framework in order to increase creative thinking (Nitag Wong, Pinunwatana 2018). Resources, opportunities, appetite and knowledge are important to support going people creativity (Chan Ki U Chag et al 2003).

Information technology literate persons are with set of IT skills, able to understand fundamental concepts of IT and who have the intellectual ability to use IT confidently (Zohier ezza 2007). To be successful and good results in learning the students should improve the digital literacy (Tatina Shop 2014). Surfing, social media will improve knowledge, practice build a good strength in terms of communication deliver a good information and practice of information seeking method (Mohamad Fazal 2016).

Decision making is process of one alternative among more number of alternatives (Russell and Brockman 2002). Decision making is a process depends upon one's knowledge, skills and experience which are influenced by one's personality to arrive right solution (Jarsalarvichot 2015). Two basic factors in decision making is the value of the results of deciding and probability of desirable result one can act according to it (Amir Mohammad Shavarai 2014).

Hypothesis

1. There is no relationship between gender and 21st century skills
2. There is no relationship between how long they use internet and 21st century skill
3. There is no relationship between creativity and decision making

METHODOLOGY

The aim of the study is to evaluate the impact of 21st century skills of higher education students. To conduct the research descriptive research design was chosen. The secondary data was collected from the journals, books, articles. Based on the secondary data four different skills of the 21st century was determined and 20 statements were framed depend on it. The statement framed as 5 point likert scale answers questions with 5 represents strongly agree and 1 represents strongly disagree. The participants of the survey were higher education students of Tiruchy district. Using random sampling method students from 5 colleges in Tiruchy was chosen for the

study and the sample size is 96. The data was collected through questionnaire and analyzed using SPSS. First T test and one way Annova is performed to find out the difference in 21st century skills, gender, how long they use internet. Second friedmen test is conducted to determine which skill ranks first. Finally regression analyzes was done relationship to find between skills.

DATA ANALYSIS AND INTERPRETATION

Female are better in 21st century skills

Since biologically girls and boys were different their abilities will be varied. To find out the relationship between gender and 21st century skills T test is used.

Null hypotheses: there is no significant difference between gender and 21st century skills.

21 st century skill	GENDER	Mean	Std. Deviation	T value	P value
	Male	3.33	.939	2.174	.032*
	Female	3.61	.300		

Table 1: Relationship between 21st century skills and gender

Statistically, there is significant difference in boys and girls 21st century skills, $P=.032(P<.05)$ with mean score ($3.61> 3.33$) support girls. Therefore null hypothesis is rejected. The girls tend to think differently and take good decisions when compare to boys.

Students who internet for 6-8 years has high 21st century skills:

The skills of students varying with how long they start to use internet. To determine the relationship between 21st century skills and how long they start to use internet Annova test is used.

Null hypothesis: there is significant difference between 21st century skills and how long they start to use internet

21 st century skills	How long using internet	Mean	Std. Deviation	F value	P value
	less than 2 yr	3.25	.896	3.535	.018
	2-5 yr	3.60	.463		
	6-8 yr	3.81	.168		
	5 yr	3.41	.220		

Table 2: relationship between 21st century skills and howlong they use internet

Since P value less than .5 null hypothesis is rejected at 5% level of significance. Hence reject null hypothesis. The students who use internet for 6-8 years have high 21st century skills when compare to student who use internet for less than 2 years. There is no relationship between students who use internet for 2-5 year, 5 year and their skills. The students use internet for 6-8 years has good technological literacy, decision making and creativity skills

Relationship between use of ICT and 21st century skills

To find out the relationship between ICT and 21st century skills Freideman test is used

	Mean Rank	rank	chisquare	P value
Technological literacy	2.99	1	47.027	.000**
Interpersonal skill	1.84	4		
Decision making skill	2.67	2		
Creativity	2.49	3		

Table 3: Relationship between skills

Statistically, there is significant difference among mean rank factors $p=.000(P<.01)$. Therefore null hypothesis was rejected.

Based on the mean rank value the technological literacy ranks first with mean score 2.99 the students were able to use computer tools to create documents, generate tables, pictures and use internet. The second rank is for decision making skill with mean score 2.67. The students were able to provide quick and accurate judgment. The creativity ranks third with mean score

2.49. The interpersonal skill ranks least with mean score 1.84. There is no proper relationship between professor and with other students. There is lack in social skills.

Relationship between creativity and decision making

To find out the relationship between 21st century skills regression analysis is used.

Model	R	R Square	F value	Sig
1	.895 ^a	.801	378.574	.000**

The correlation coefficient R value is .895 measures the degree of correlation. The R² value explained 80% variation in creativity and decision making skills.

The dependent variable is significantly well. Here $P < .01$, which is 1% significant and indicates that overall the regression model statically predicts the outcome variable(i.e, it is a good fit for data)

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	.544	.158		3.433	.001
Creativity	.845	.043	.895	19.457	.000

The regression equation is

$$\text{Creativity} = .544 + .845(\text{decision making})$$

The independent variable here is creativity and dependent variable is decision making.

DISCUSSION

The research was conducted to improve the understanding of impact of ICT to develop 21st century skills among higher education students in Tirchy district. This study shows the there is significant differences between the different sets to develop 21st century skills.

First, the finding shows that there is difference in 21st century skills of boys and girls. The 21st century skills of girls are better than boys. Biologically girls and boys were different so that their abilities will be varied. The technical usage of girls and boys will be different. The girls tend to think differently and take good decisions when compare to boys.

The key finding of the study is the students have good technological literacy. The utilization of ICT increases their ability to use technological tools. They are able to use internet for downloading online resources for learning. It helps the students to share questions and get more replies. While using ICT for education purpose the student's decision making skill will be improved. The students were able to take quick decision on different situations. ICT help them to arrive conclusion to solve issues.

Another important finding of the study is the utilization of ICT tends to decreases interpersonal skills of the student. In online learning environment students will be isolated. They cannot communicate efficiently like traditional learning environment. The social skill of the student is low in ICT education.

There is relationship between creativity and decision making skill of the students. The regression equation is

$$\text{Creativity} = .544 + .845(\text{decision making})$$

Finally the finding of the study is there is difference in 21st century skills of the students with respect to how long they use internet. The student who use internet for 6-8 years has higher 21st century skills when compare to students who use internet for less than 2 years. The students use internet for 6-8 years has good technological literacy, decision making and creativity skills.

CONCLUSION AND RECOMMENDATION

Higher education prepares students with the skill needed in the labour market. Education for sustainability transform innovative, student oriented method for teaching and learning. ICT replaced traditional teaching practices with modern technologies. The study investigated the impact of ICT to develop 21st century skills. The study reveals that the students posses good technological literacy. Students were lack in interpersonal skill. Girls and the students who use

internet for many years has good 21st century competency. It is suggested to create learning environment that develops team building and interpersonal skill. Group assignments can be provided. Group discussion, role play, debate can be conducted which will improve interpersonal skill. Teachers can provide activities like brainstorming, problem solving. The students should get feedback from teachers in order to reduce their mistake. The students should practice listening to others. Teachers should provide learning activities which allows students to show their creativity. Students should encourage coming up with new ideas and alternative ways to solve problem. Special training can be given to boys and girls separately. The students should encourage using internet from early age. Inspire students to learn various methods and practice new skills by taking coding, tennis, painting lessons. Create self centered learning environment which foster 21st century skills. Universities should focus to provide skill based curriculums through which students can develop competencies needed for our planet future and their life.

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