PERCEPTION OF SECONDARY SCHOOL TEACHERS TOWARDS THE USE OF ICT IN TEACHING LEARNING PROCESS

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Abstract

The rapid expansion of the Information and Communication Technologies (ICTs) has transformed learners into digital learners, requiring teachers to integrate technology into their pedagogical approaches, where teachers attitudes, technological knowledge and skills play a significant role in its effective transformation. From this perspective, the current study presents teacher's Perception towards the use of ICT in teaching learning process. A sample of 80 secondary school teachers of Bhubaneswar block were randomly selected. Descriptive survey method was adopted for the study. A self-made Perception Inventory on the use of ICT was used to collect data from the sample. Mean, standard deviation, t-test was applied to analyze the data. The results showed that most of the secondary school teachers perceive the use of ICT in teaching learning process favourably. Most of the teachers perceive the dimension "pedagogical use of ICT' more favourably. There is no difference in the perception of male and female secondary school teachers towards the use of ICT in teaching learning process. There exists significant difference in the perception of Science and Arts secondary school teachers towards the use of ICT. Science teachers show more favorable perception towards the use of ICT than the Arts teachers.

Keywords: ICT, Perception, Teaching Learning Process

Introduction: Being an essential part of the present time, Information and Communication technology(ICT) significantly Influences all domains of human life (Gnambs,2021). Similarly, ICT has also transformed the education sector and turned the instructional Practices into more interactive and productive(Lin et.,2017), As it offers various tools which are use in traditional as well as online teaching spaces and assists in building a proactive classroom environment (Jogezai et al., 2021). Technology incorporated instructional practices not only enhance the quality of teaching (Akram et al.,2021 a), but also enable students to develop

their skills, boost their motivation and enhance their knowledge and information efficiently (Chen et al.,2018) During the COVID-19 global crisis , when the entire world's activities across all domains of human life got restricted, ICT played a supporting role in sustaining teaching learning activities on one hand (Thaheem et al., 2021). While on the other hand, ICT-integrated teaching and learning provide a flexible approach and better access to learning opportunities as a substitute for face to face interaction (Akram et al.,2021b) However, teachers faced difficulties in making the best use of ICT in their instructional practices due to inadequate technological competencies, yet the transitory phase improved their digital skills . Furthermore, the utilization of ICT in Education for enhancing instructional practices effectiveness has been crucial for the last few decades worldwide(U.S Department of Education,2017).

Kaur (2019) studied the relationship between attitudes and beliefs of Indian school teachers towards ICT and ICT usages in the Indian classroom. Her findings reveals that attitude of Indian teachers towards the use of ICT is positive nut the use of ICT in Indian classrooms is not sufficient. The major concerns and problems identified by this study in the use of ICT tools by the teachers include limited modern and technological infrastructure, rigid time table and fixed curriculum, low technical support, lack of effective training less competency and motivation on the part of teachers in the use of ICT.

Akram et al.,(2022) studied Teacher's perceptions of Technology Integration in teaching learning practices and found the teachers exhibit positive perceptions regarding technology integration in teaching learning process. They believe that technology-incorporated teaching assists them in enhancing their instructional practices effectively, making the learning process exciting and interactive and keeping learners motivated.

Rational of the study: Regardless of the quantity and quality of technology placed in classrooms, the key to how those tools are used is the teacher; therefore teachers must have the competence and the right attitude towards technology (Kadel, 2005; Kyriakidou, Chrisostomou, & Bank, 2000). Hence it is required to investigate the teachers' perception towards the use of ICT in teaching learning process for its successful integration at school level. Hence the present study is entitled as:

"PERCEPTION OF SECONDARY SCHOOL TEACHERS TOWARDS THE USE OF ICT IN TEACHING LEARNING PROCESS"

Objectives of the Study: The following are the objectives of the present study:

1.   To assess the perception of the secondary school teachers towards the use of ICT in teaching learning process.

2.   To compare the perception of the male and female secondary school teachers towards the use of ICT in teaching learning process.

3.   To compare the perception of the male and female secondary school teachers towards different dimensions of the use of ICT in teaching learning process.

4.   To compare the perception of the Science and Arts secondary school teachers towards the use of ICT in teaching learning process.

5.   To compare the perception of the Science and Arts secondary school teachers towards different dimensions of the use of ICT in teaching learning process.

Hypotheses

Ho1:There is no significant difference in the perception of male and female secondary school teachers towards the use of ICT in teaching learning process.

Ho2:There is no significant difference in the perception of male and female secondary school teachers towards the different dimensions of the use of ICT in teaching learning process.

Ho3:There is no significant difference in the perception of the Science and Arts secondary school teachers towards the use of ICT in teaching learning process.

Ho4:There is no significant difference in the perception of the Science and Arts secondary school teachers towards the different dimensions of the use of ICT in teaching learning process.

Delimitation of the Study: The study is delimited to 20 numbers of Govt. secondary schools of Bhubaneswar block of khordha District of Odisha. Perceptions of the teachers towards the use of ICT in teaching learning process was assessed by using a self-made Perception Inventory

Methodology of the Study

Research Method: By its nature the study falls under the category of descriptive research. So, survey method is adopted to determine the status of present phenomenon.

Sample: In the first phase 20 secondary schools from Bhubaneswar block were selected randomly. Then in second phase from each selected school two female teachers (one Science and one Arts) and two male teachers (One Science and one Arts) were selected randomly. Thus total 80 teachers (with equal numbers of male and female and Science and Arts) constituted the sample of the study.

Tools used: A self-made Inventory has used by the investigator to assess the perception of the secondary school teacher towards the use of ICT in teaching learning process. The dimensions

of the questionnaire are knowledge on ICT, pedagogical use of ICT, personal use of ICT, Hardware and Software Materials and Teachers training on ICT.

Scheme of analysis and interpretation: In the present study Mean, Standard Deviation and t-test were used for analysis of the data and percentage analysis also used. For the convenience result the data are analyzed and interpreted objective wise, which are as follows:

A. Assessment of the perception of the teachers towards the use of ICT in teaching learning process: To assess the perception of secondary school teachers towards the use of ICT in teaching learning process, the mean scores and the standard deviations of the whole sample for the entire inventory and for the different dimensions were tabulated and presented in the table below.

Table-1 Assessment of the perception of secondary school teachers towards the use of ICT in teaching learning process.

Inventory/ Dimensions	N	Mean	SD	Mean Score %
Total Inventory	80	41.24	7.69	68.73
Knowledge on ICT	80	8.8	2.61	73.33
Pedagogical Use of ICT	80	9.79	1.8	81.5
Training on ICT	80	6.55	3.15	54.16
Hardware and Software Materials	80	7.21	2.91	60.03
Personal use of ICT	80	7.75	2.41	64.58

The Table-1 reveals that out of the total maximum sore i.e. 60 for the entire inventory the secondary school teachers have scored 41.24 as their mean sore. The calculated mean score and the mean score percentage of entire group clearly indicate that most of the secondary school teachers have perceived the use of ICT in teaching learning process favourably. Similarly, with reference to the different dimensions of the inventory the obtained mean sores and the mean score percentages also reveal that the teachers of the secondary schools of Bhubaneswar perceive all the dimensions favourably(Shown in Figure-1). However, the teachers have perceived the 'pedagogical use' dimension most favourably(mean score % as 81.5) in comparison to other dimensions. This table also shows that teachers they perceive the 'training on ICT ' dimension less favourably (with mean sore % as 54.16) in comparison to other dimensions.
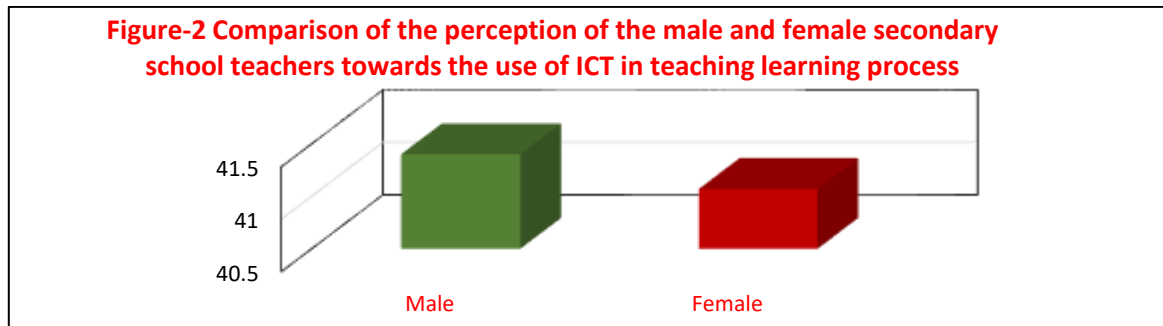
Figure-1:Comparision of perception of secondary school teachers towards the use of ICT in teaching learning process.
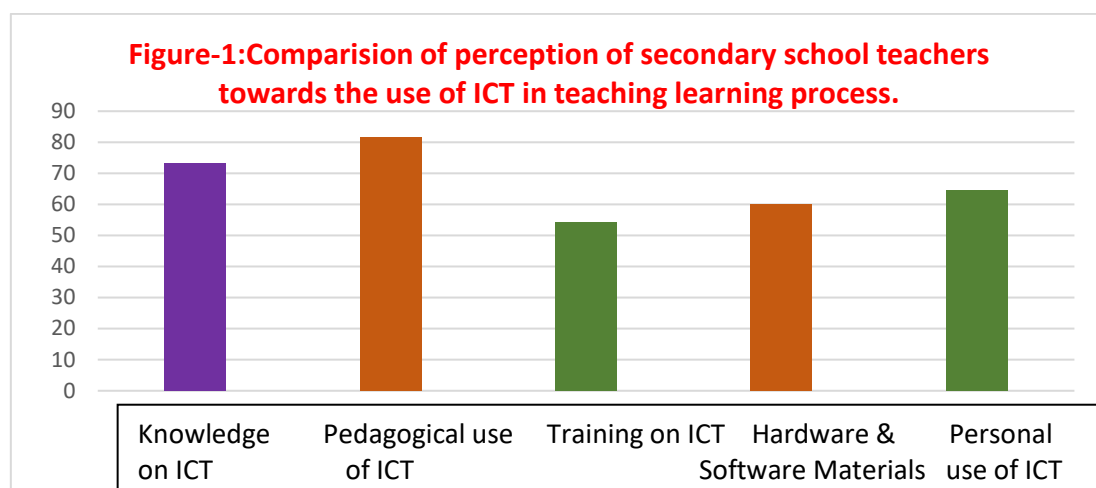
B. Comparison of the perception of the male and female teachers towards the use of ICT in teaching learning process: T-test was used to compare the perceptions of the male and female teacher towards the use of ICT in teaching learning process. The result of the comparison is presented in the Table-2.

Table-2: Comparison of the perception of the male and female secondary school teachers towards the use of ICT in teaching learning process.

Group	SAMPLE	M	SD	SEM	SEMD	T-VALUE
Male	40	41.4	6.52	1.03	1.49	.22
Female	40	41.07	6.88	1.08		

It is revealed from the Table-2 that the mean score of male and female teachers on the use of ICT in teaching learning process are nearly equal. This clearly indicate that the male and female perceive the use of ICT in teaching learning process equally. Regarding the level of significance difference between the male and female teachers' perception towards the use of ICT in teaching learning process Table-2 reveals that the obtained t-value is .22, which is not significant either at .01or at level or at .05 level of significance. Because at .05 level the table value is 1.99 and at .01 level the table value is 2.64 which are more than calculated t-value .22. Thus the Ho1 i.e'there is no significant difference in the perception of male and female secondary school teachers towards the of ICT in teaching learning process is retained. This indicates that significant difference does not exist in the male and female teachers' perception towards the use of ICT in teaching learning process.

Figure-2 Comparison of the perception of the male and female secondary school teachers towards the use of ICT in teaching learning process

C. Comparison of the perception of the male and female teachers towards the different dimensions of the use of ICT in teaching learning process.

Analysis of male and female teachers' perception on different dimensions of the inventory are given in the Table-3.

Table-3: Comparison of the perception of the male and female secondary school teachers towards the different dimensions of the use of ICT in teaching learning process.

Dimensions	Gender		Sample(N)		Mean		SD		't" value Level of Significance *.01**,05
Knowledge on ICT	Male	Female	40	40	8.82	8.78	2.58	2.88	0.08
Pedagogical use of ICT	Male	Female	40	40	10.05	9.52	1.83	2.03	.68
Training on ICT	Male	Female	40	40	5.8	7.3	3.62	2.80	1.48
Hardware and Software Materials	Male	Female	40	40	6.65	7.75	3.52	2.88	1.13
Personal use of ICT	Male	Female	40	40	7.55	6.7	1.86	2.96	.98

The Table-3 reveals that the calculated t-values for knowledge on ICT, pedagogical use of ICT. training on ICT, Hardware and Software Materials and personal use of ICT are0.08, 0.68, 1.48, 1.13 and 0.98 respectively. These 't' values are less than the table value 1.99 and 2.64 both at .05 and .01 level. Hence, from the above table and Figure-3 it is clear that there doesn't exit significant difference in the perceptions of the male and female teachers towards the use of ICT

in teaching learning process. Thus, the Ho2 i.e. 'there is no significant difference in the perception of male and female teachers towards the use of ICT in teaching learning process is retained.

Figure-3:Comparison of the perception of the male and female secondary school teachers towards the different dimensions of the use of ICT in teaching learning process
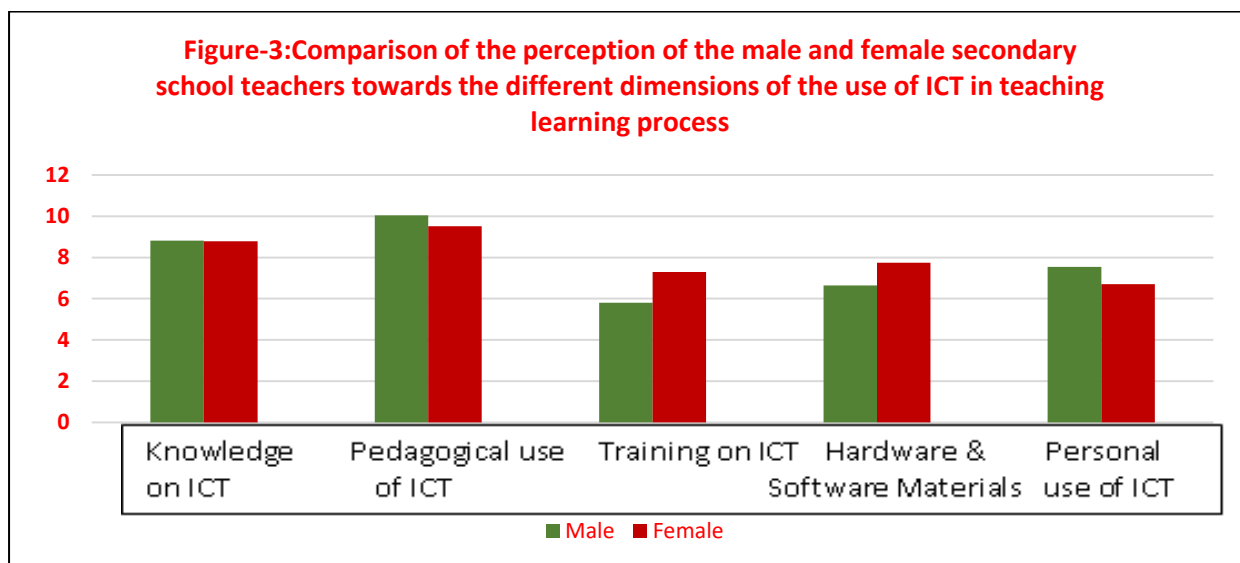
D. Comparison of the perception of the teachers of the Science and Arts streams towards the use of ICT in Teaching Learning process

The mean differences between the two groups were worked out by applying 't' test. The result of the comparison is presented in the Table-4.

Table-4: Comparison of the perception of the teachers of the Science and Arts streams towards the use of ICT in Teaching Learning process

Group	SAMPLE	M	SD	SEM	SED	T-VALUE
Science	40	43.15	4.86	.77	1.44	2.65
Arts	40	39.33	4.68	1.22		

It is revealed from the Table-4 and Figure-4 that the mean score of perception of the Science teacher is more than the mean score of the Arts teachers towards the of ICT in teaching learning process. This clearly indicates that the Science teachers have more positive perception towards the use of ICT in teaching learning process in comparison of their Arts counterparts. To ascertain whether the mean differences between the two groups are statistically significant or not, the 't' value was calculated and shown in the Table-4it is clear from the above table that the observed t-value is 2.65, which is significant both at .05 and.01 level. Because at .05 levels the table value are 1.99 and at .01 level the table value is 2.64 which are less than calcutated t-value i.e. 2.65. Hence, the Ho3 i.e.'there is no significant difference in the perception of the

Science and Arts secondary school teachers towards the use of ICT in Teaching Learning process ' is rejected.

Figure 4: Comparison of the perception of the teachers of the Science and Arts streams towards the use of ICT in teaching learning process
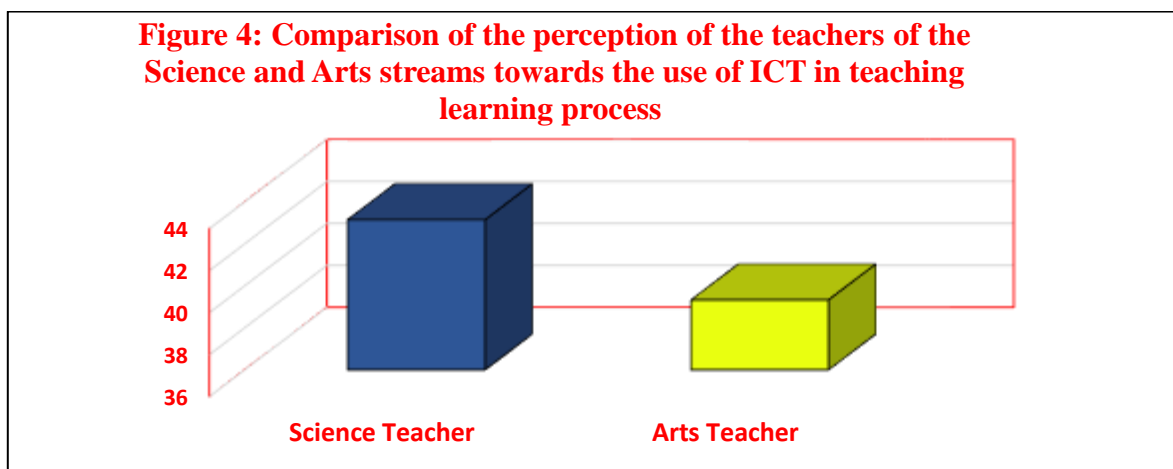
E. Comparison of the perception of the teachers of the Science and Arts streams towards the different dimensions of the use of ICT in teaching learning process:

The mean scores comparison of Science and Arts teachers' perception on different dimensions of the inventory were made by applying 't' test and results are shown in the Table-5.

Table-5: Comparison of the perception of the teachers of the Science and Arts streams towards the different dimensions of the use of ICT in teaching learning process

Dimensions	Academic Stream		Sample(N)		Mean		SD		't" value Level of Significance **.01*,05
Knowledge on ICT	Science	Arts	40	40	9.8	7.8	1.83	2.88	3.703**
Pedagogical use of ICT	Science	Arts	40	40	10.2	9.38	1.53	2.07	1.87
Training on ICT	Science	Arts	40	40	7.05	6.05	2.42	3.87	2.22*
Hardware and Software Materials	Science	Arts	40	40	8.03	6.38	2.15	3.67	2.51*
Personal use of ICT	Science	Arts	40	40	8.03	7.47	2.14	2.67	1.03

From the Table5 and Figure-5 it is informed that the teachers of the science stream have scored better mean scores in all the dimensions of the perception inventory in comparison to

their Arts counterparts. However, to ascertain that whether differences observed are statistically significant or not the 't' test was applied and shown in the above table.
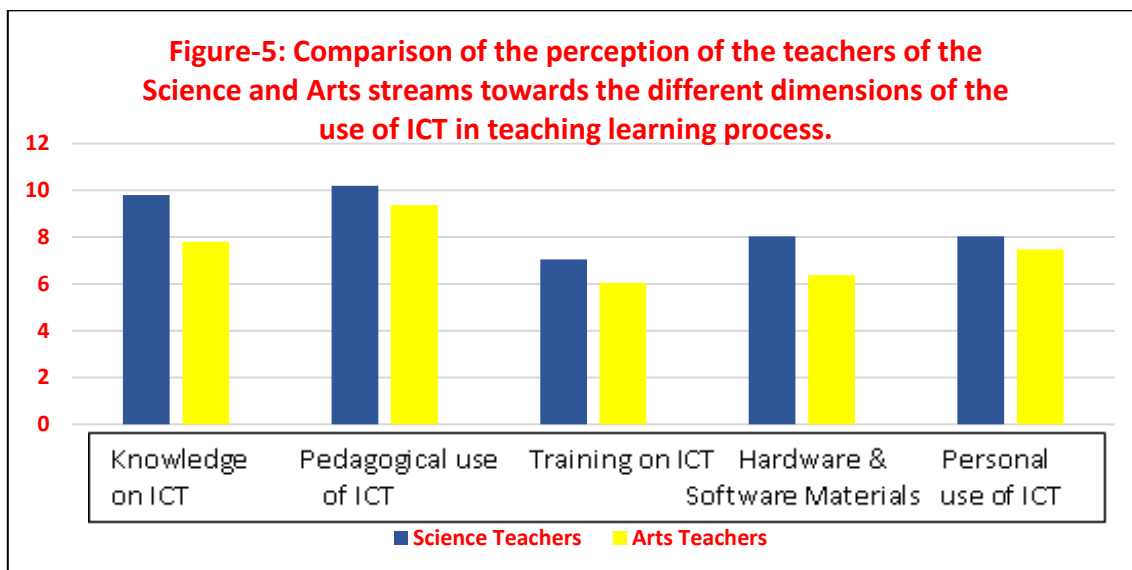
The above table reveals that the calculated t-value of the mean scores of the Science and Arts groups with reference to the 'knowledge on ICT ' dimension is 3.70which is more than the table value 1.99 and 2.64. This indicates that there exits significant difference between the perception of the science and arts teachers with reference to the 'knowledge on ICT ' dimension both at 0.01 and 0.05 level of significance. Similarly, the calculated 't' values for the 'training on ICT ' and 'hardware and software materials' dimensions are 2.22 and 2.51 respectively which are more than the table value 1.99 and less than the table value i.e. 2.64. This indicates that there exist significant differences between the two groups at 0.05 level with reference to these two dimensions and science teachers have shown better perception on these two values in comparison to their Arts counterparts. However, with reference to the dimensions 'pedagogical use of ICT'and 'personal use of ICT ' the calculated 't' values are 1.87 and 1.03 which are less than the table value 1.99 which indicates that there exists no difference between the Science and Arts teachers with reference to the 'pedagogical use of ICT ' and 'personal use of ICT ' dimensions. On the basis of the above analysis it is concluded that the Ho5 i.e. 'there is no significant difference in the perception of the Science and Arts secondary school teachers towards the different dimensions of the use of ICT in teaching learning process is partially rejected.

Major findings

1. Most of the secondary school teachers perceive the use of ICT in teaching Learning process favourably.

2. The secondary school teachers perceive all the dimensions (knowledge on ICT, pedagogical use of ICT, training on ICT, Hardware and Software Materials, personal use of ICT)of the use of ICT in teaching learning process favourably.

3. There is no difference in the perception of the Male and Female secondary school teachers regarding the use of ICT in teaching learning process.

4. There is no difference in the perception of the Male and Female secondary school teachers to the different dimensions of use of ICT in teaching learning process.

5. The teachers of the Science stream perceive the use of ICT significantly more favorable way in comparison to their Arts counterparts.

6. Significant differences are found in the perception of the Science and Arts teachers with reference to 'knowledge on ICT ', 'personal use of ICT ' and 'hardware and software materials'. The Science teachers they perceive these dimensions more favourably than their Arts counterparts do. With reference two other dimensions ('pedagogical use of ICT ' and ' training on ICT ') both Science and Arts teachers they perceive the dimensions in equal manner.

Discussion on the basis of findings : 1. The study reveals that most of the secondary school teachers perceive the use of ICT in teaching learning process favourably. It may also be seen as a way of opening up our school system towards the use of ICT in schools which would allow the students and teachers to make the best use of ICT for academic purpose. Many other studies also confirm this finding((Rajasekar and Raja ,2007;Gulbahar and Guven, 2008:Bee Theng Lau and Chia Hua Sim, 2008;and Olga ,2013) and Akram, 2022.

With reference to the different dimensions (knowledge on ICT, pedagogical use of ICT, training on ICT, Hardware and Software Materials, personal use of ICT) of the use of ICT in teaching learning process favourably. Though, teachers have reported strong favourable attitude towards the 'pedagogical use of ICT' dimensions of the project. This clearly indicates that most of the teachers feel the importance of ICT in educational settings. On the basis of the findings of the research findings relating to the ICT@ School project of Meghalaya Roychoudhury, Dwivedi, &Purbey, (2011) reported the similar findings that teachers show their interest in the introduction of ICT in schools.

2. The results of the study indicate that there is no difference in the perception of the Male and Female secondary school teachers regarding the use of ICT in teaching learning process. This finding confirms that sex of a teacher does not affect the perception of the teachers towards the use of ICT in general. Quite a good number of studies also confirm this finding. Findings of the other studies also have shown the same trend (Panigrahi,

2011;Kulkarni, 2012;Padmavathi, 2013; and Khjuria&Panwar. 2014). The growing ICT awareness in the society has probably had the positive impact on the perceptions of the teachers towards the use of ICT in teaching learning process.

3. The result of the study also reflects that no significant differences are marked in the perceptions of the male and female teachers towards the different dimensions of the ICT. These findings are quite encouraging too. The reaseachers like, Panigrahi, 2011;Kulkarni, 2012;Padmavathi, 2013; Khjuria&Panwar. 2014 and Manprit 2019 also reported that regarding the perception towards ICT no gender differences are marked.

4. Another major finding of the study reveals that significant difference exists in the perception of the Science and Arts teachers towards the use of ICT in teaching learning process. This finding further indicates that science teachers they have more favourable perception towards the use of ICT than their Arts counterparts. This needs further investigation to ascertain why female teachers they show less favourable attitude towards the use of ICT. However, the studies conducted by Padmavathi (2013) also indicated that science teachers they possess better perception towards ICT in comparison to the teachers' belong to social science stream.

5. The study also reveals that there exist significant difference in the perception of the Science and Arts teachers with reference to 'knowledge on ICT ', 'training on ICT ' and 'hardware and software materials'. The Science teachers they perceive these dimensions more favourably than their Arts counterparts. With reference two other dimensions ('pedagogical use of ICT' and 'personal use of ICT ') both Science and Arts teachers they perceive the dimensions in an equal manner. Further researches may be conducted to ascertain the reasons why the teachers of the arts stream have perceived the 'knowledge on ICT ', 'training on ICT and 'hardware and software materials' less favourably than their science counterparts. Padmavathi (2013) also indicated that science teachers they possess better perception towards ICT in comparison to the teachers' wo belong to social science stream.

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