Analysis of Effective Communication and Proficient Use of Information and Communication Technologies: A Case Study of Secondary School Teachers of Pakistan

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Abstract
The study was aimed to analyze the effectiveness of secondary school teachers’ communication competencies and proficient use of information and communication technologies (ICTs). The main objectives of the study were: (a) to integrate effective communication and proficient use of information communication technology based on national professional standards for teachers, and (b) to categorize secondary school teachers’ communicative and ICTs competencies based on five levels defined in rubrics. The population of the study consisted of secondary school teachers of Punjab Province. To conduct the observational survey of this research, a sample of 453 participants from Punjab province were selected to observe the teachers in field directly. The collected data through observational checklist were analyzed with the help of software (SPSS) by using statistical formulas of chi-square, simple mean and percentage. The analysis of various levels concludes that more than half of the secondary school teachers did not know the importance of communication skills in teaching. Further this research study concluded that the use of ICTs in classroom also remained a question mark for teachers. More than half of the teachers rarely knew about the effective use of information and communication technologies.

Keywords: Communication, Rubrics, Secondary Schools, Information and Communication Technologies (ICTs), Pakistan.
I. Introduction

The profession of teaching is considered as a building block for all other professions. The quality of teaching helps to shape the future of students and prepares them to become responsible citizens. Teachers play a central role in ensuring quality and effectiveness in learning and establishing foundation of a learned and educated society (Peterson & Peterson, 2005). The wealth of a nation depends upon how effectively minds of its youth are trained to take the various responsibilities in the society. There is always a need to put a greater emphasis on professional improvements through continuous training of teachers to meet the challenging demands of the profession of teaching. The stimulating demands of the professional teaching are intended to plan for development of professional skills of teachers. The concept of teacher evaluation and teacher licensing system has been modified throughout the world (Danesh et al., 2004).

(Hinchliff, 2009) states that it is quite clear for the latest scenario that with the passage of time the professional development of teachers has focused little on improvement of instructional methods. The teachers have become translators of information, so the students have lesser chances for turning knowledge into wisdom. In order to educate in the 21st century, teachers are desired to cultivate and maintain the student’s interest in the material by showing how this knowledge can be applied in the real world (Zeki, 2009). They are expected to play their role to increase their students’ curiosity, which helps the students to become lifelong learners. The policy and planning Wing of Ministry of Education Pakistan and United Nations Educational, Scientific and Cultural Organization (UNESCO) are trying to implement the programs, which may strengthen teachers’ education in Pakistan with the financial support of United States Agency for International Development (USAID). Teaching standards for secondary school teachers have been developed in consultation with all stakeholders from all provinces of Pakistan. Although, the professional standards are aimed towards the primary level beginning teachers, yet these standards can be adapted and used for secondary school teachers in Pakistan. The standards of professional knowledge, skills and attitude are designed to define competencies, skills, and attributes thought to be essential for teachers. These standards also guide the detailed development of pre-employment and in-service programs of teacher education. These standards also establish policies, procedures and systems for accrediting teacher education programs and institutions offering them and focus to assure public about the quality of educators and educational outputs and outcomes. The recommended standards for evaluation of teachers’ competencies are:

- Subject Matter knowledge
- Human growth and development
- Knowledge of Islamic/ethical values/social life skill
- Instructional planning and strategies, assessment
- Learning environment
- Assessment
- Effective communication and proficient use of information and communication technologies
- Collaboration and partnerships
- Continuous professional development and code of conduct
Teaching of English as Second/foreign language (ESL/EFL).

Effective communication and proficient use of information and communication technologies are an indispensable part of the contemporary teaching world. In fact, culture and society have to be adjusted to meet the challenges of the knowledge age. The pervasiveness of ICT has brought about rapid technological, social, political, and economic transformation, which has eventuated in a network society organized around ICT (M. O. Yusuf, 2005).

The field of education has not been unaffected by the penetrating influence of information and communication technology. Undoubtedly, ICT has put a strong impact on the quality and quantity of teaching, learning, and research in traditional and distance education institutions. In concrete terms, ICT can enhance teaching and learning through its dynamic, interactive, and engaging content, and it can provide real opportunities for individualized instructions (M. Yusuf & Onasanya, 2004).

Objectives of the study were: (a) to analyze the effective communication and proficient use of information and communication technologies based on national professional standards for teachers in Pakistan, and (b) to categorize secondary school teachers’ communication and ICTs competencies based on five levels defined in the rubrics.

II. Research Methodology

The nature of the study was descriptive and following procedure was adopted to complete the research work. The population of the study consisted of secondary school teachers of Government sector, including boys and girls schools, situated in urban and rural areas of the province Punjab. An observational survey was conducted using probability sampling (multistage cluster sampling), which according to (Connolly, 2007) serves as the foundation of all statistical tests. Sample was drawn from the province of Punjab, which was divided into three clusters: Northern cluster (Hafiz Abad and Chakwal), Central cluster (Sargodha and Faisalabad), and Southern cluster (Lodhran and Muzaffargarh). From each cluster two districts were selected as a sample of the study and each was included in the study as the districts (strata) were spread geographically and thus, sample was spread, large and ideally representative of the population because according to (Best & Kahn, 2006) in survey research the sample would be larger enough than experimental researches to represent the population. The districts (strata) were further divided into urban and rural division and so, the study compared the six districts of Punjab Province. The population of secondary school teachers in the Province (Punjab), according to School Education Department, Government of Punjab, is 43,200 (http://www.schools.punjab.gov.pk/). To conduct the observational survey for this research, a sample of 453 participants (teachers) were selected to observe them in the field directly. The size of sample was rationalized as (Cohen, Manion, & Morrison, 2013) suggested to take a sample considering the size of population i.e. if the population of a research study is 100,000 and above, then sample size of 384 respondents would be considered as appropriate. However, the sample 453 respondents was taken for this research, which is above the sample size suggested by (Cohen et al., 2013).
The study was conducted using an observational checklist because the teachers’ effective communication and proficient use of information and communication technology competencies at secondary school level could be analyzed in quantitative terms in a better way through the use of observational checklist. The competencies of the respondents were observed in natural settings, which were practiced and applied by the respondents in the classrooms. An observational checklist was developed to evaluate the effectiveness of teachers’ competencies at secondary school level, which was based on prescribed levels of teacher accreditation designed by Policy and Planning Wing of Ministry of Education, Pakistan. This observational checklist was used to evaluate the subject knowledge competencies of secondary school teachers based on national professional standards for teachers. The parameters of observational checklist were taken from the established criteria of each standard, which includes knowledge and understanding, dispositions, and performance skills. The observations helped to collect the empirical evidences of practices in the classroom teaching. Each standard was further analyzed in accordance with its pre-determined factors i.e. knowledge and understanding, disposition, and performance skills. The data from these observations were used to cross check and verify the evidences with the data obtained through questionnaires. The evidences of observations were also confirmed through various sources of verifications e.g. teachers dairies, portfolios, lesson plans, individual conferences with teachers, peer reviews, work sheets, journal entries, students’ work samples, test scores, research evidences, and teachers’ comments etc.

III. Results and Discussions

Data were collected in person from selected sample of the research population from each district. Prior consent from the participants and institutional heads was taken before collection of data. The collected data was analyzed with the help of Statistical Package for Social Sciences (SPSS) version 20 by using statistical formulas of frequency, percentage, simple mean, and Chi-Square. Following are the teaching competencies related to the standard (effective communication and proficient use of information communication technologies):

C-1: Teacher understands the importance of communication skills in teaching.
C-2: Teacher knows the utilization of technological equipments in classroom and lab.
C-3: Teacher knows the effective use of ICTs.
C-4: Teacher knows the importance of art work in the classroom.
C-5: Teacher appreciates the cultural diversity in the classroom.
C-6: Teacher remains a responsible listener.
C-7: Teacher fosters diversity of opinions among students in the classroom.
C-8: Teacher enhances learning through ICTs.
C-9: Teacher uses local language for effective teaching and learning.
C-10: Teacher applies questioning techniques for effective learning.
C-11: Teacher demonstrates social differences through communication.
C-12: Teacher prepares and updates portfolios of students.
C-13: Teacher incorporates up-to-date information in lesson plans.
C-14: Teacher assesses students’ test items and assignments through computer.
The analysis of various levels of effective communication and proficient use of information and communication technologies is considered to be one of the important standards for teachers of Pakistan. The related teachers were observed to assess their communicative competency level ranging from level-0 to level-4. Each level was categorized in terms of assigned parameters as mentioned above. Understanding of the importance of communication skills in teaching is an integral part of the above mentioned standard. This understanding when gauged through classroom observation revealed that 38.8% of the secondary school teachers know the importance of communication skills while its \( p \)-value is 0.016 (< 0.05). 36.6% of the teachers know the use of technologies in classrooms and laboratory while its \( p \)-value is 0.020 (< 0.05). Classroom observation further indicated that 38.9% teachers know the effective use of information communication technologies while its \( p \)-value is 0.004 (< 0.05). 46.1% teachers know the importance of arts in classroom, which they were practicing during classroom teaching also while its \( p \)-value is 0.001 (< 0.05). The fifth aspect of standard showed that 35.1% teachers, during classroom observation, almost every time appreciated the cultural diversity in the classroom while its \( p \)-value is 0.025 (< 0.05). It was also observed that 34.7% teachers sometimes remained responsible listeners while its \( p \)-value is 0.000 (< 0.05). Data in table reveals that 37.5% teachers almost every time foster diversity of opinions among students in the classroom while its \( p \)-value is 0.050 (= 0.05). 32.5% teachers seldom enhance learning through ICTs while its \( p \)-value is 0.004 (< 0.05). The data further portray that 40.4% of the teachers almost every time practice local language for effective teaching and learning while its \( p \)-value is 0.020 (< 0.05). 36.9% secondary school teachers applied questioning techniques for effective learning while its \( p \)-value is 0.018 which is < 0.05. 36.6% teachers occasionally demonstrated social differences through communication while its \( p \)-value is 0.000 (< 0.05). Data in table indicates that 38.9% teachers prepare and update professional portfolios and were found at level-2 while its \( p \)-value is 0.003 (< 0.05). The analysis of various levels further demonstrated that most of the teachers 43.9% never had up-to-date information in lesson plans while its \( p \)-value is 0.000 (< 0.05). 62.3% teacher did not assess students’ test items and

<table>
<thead>
<tr>
<th>Competency</th>
<th>L-0</th>
<th>L-1</th>
<th>L-2</th>
<th>L-3</th>
<th>L-4</th>
<th>Total</th>
<th>( \chi^2 )</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>C-1</td>
<td>1.3</td>
<td>22.5</td>
<td>33.8</td>
<td>38.4</td>
<td>4.0</td>
<td>100</td>
<td>258.36</td>
<td>0.016</td>
</tr>
<tr>
<td>C-2</td>
<td>2.9</td>
<td>26.5</td>
<td>36.6</td>
<td>29.1</td>
<td>4.9</td>
<td>100</td>
<td>209.62</td>
<td>0.020</td>
</tr>
<tr>
<td>C-3</td>
<td>3.1</td>
<td>23.6</td>
<td>30.0</td>
<td>38.9</td>
<td>4.4</td>
<td>100</td>
<td>225.99</td>
<td>0.004</td>
</tr>
<tr>
<td>C-4</td>
<td>10.2</td>
<td>21.2</td>
<td>46.1</td>
<td>16.6</td>
<td>6.0</td>
<td>100</td>
<td>224.34</td>
<td>0.001</td>
</tr>
<tr>
<td>C-5</td>
<td>3.5</td>
<td>23.0</td>
<td>31.6</td>
<td>35.1</td>
<td>6.8</td>
<td>100</td>
<td>184.56</td>
<td>0.025</td>
</tr>
<tr>
<td>C-6</td>
<td>4.4</td>
<td>24.9</td>
<td>34.7</td>
<td>12.8</td>
<td>23.2</td>
<td>100</td>
<td>123.24</td>
<td>0.000</td>
</tr>
<tr>
<td>C-7</td>
<td>2.4</td>
<td>29.1</td>
<td>26.7</td>
<td>37.5</td>
<td>4.2</td>
<td>100</td>
<td>225.22</td>
<td>0.050</td>
</tr>
<tr>
<td>C-8</td>
<td>3.8</td>
<td>30.5</td>
<td>32.5</td>
<td>28.9</td>
<td>4.4</td>
<td>100</td>
<td>192.72</td>
<td>0.004</td>
</tr>
<tr>
<td>C-9</td>
<td>3.3</td>
<td>23.8</td>
<td>31.3</td>
<td>40.4</td>
<td>1.1</td>
<td>100</td>
<td>270.69</td>
<td>0.020</td>
</tr>
<tr>
<td>C-10</td>
<td>0.9</td>
<td>34.2</td>
<td>23.4</td>
<td>36.9</td>
<td>4.6</td>
<td>100</td>
<td>249.06</td>
<td>0.018</td>
</tr>
<tr>
<td>C-11</td>
<td>5.1</td>
<td>29.4</td>
<td>36.6</td>
<td>24.7</td>
<td>4.2</td>
<td>100</td>
<td>194.67</td>
<td>0.000</td>
</tr>
<tr>
<td>C-12</td>
<td>34.7</td>
<td>16.8</td>
<td>38.9</td>
<td>9.5</td>
<td>0.2</td>
<td>100</td>
<td>245.67</td>
<td>0.003</td>
</tr>
<tr>
<td>C-13</td>
<td>43.9</td>
<td>16.6</td>
<td>34.9</td>
<td>4.2</td>
<td>0.4</td>
<td>100</td>
<td>325.75</td>
<td>0.000</td>
</tr>
<tr>
<td>C-14</td>
<td>62.3</td>
<td>11.5</td>
<td>15.2</td>
<td>10.4</td>
<td>0.7</td>
<td>100</td>
<td>531.62</td>
<td>0.000</td>
</tr>
<tr>
<td>Overall</td>
<td>11.6</td>
<td>25.4</td>
<td>31.3</td>
<td>26.2</td>
<td>5.1</td>
<td>100</td>
<td>182.67</td>
<td>0.012</td>
</tr>
</tbody>
</table>
assignments through computer and were placed under the category of level-0 (Not demonstrated teachers) while its p-value is 0.000 (< 0.05). The overall results of the study reveals that most of 31.3% respondents were found at level-2, 26.2% of the respondents have attained level-3, 25.4% were found at level-3, 11.6% were found at level-0 while only 5.1% of the secondary school teachers were found at level-4 which is the competency level while its p-value is 0.012 which is again < 0.05. This comparative analysis showed that the competencies of teachers’ in-terms of communication skills and proficient use of ICTs were weak.

Figure 1: Teachers Competencies Levels (attained) through Effective Communication and Proficient Use of Information and Communication Technologies

According to accreditation council for teacher education criteria no standard is rated lower than 2.00, the grand mean for candidate’s status for level 0 is 2.50< 3.00, level I is 3.00 < 3.50, level II is 3.50 < 4.00, level III is 4.00 < 4.50 and level IV is 4.50< (http://www.pacte.pk).

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Teaching Competency</th>
<th>Mean Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Teacher understands the importance of communication skills in teaching</td>
<td>3.50</td>
</tr>
<tr>
<td>2</td>
<td>Teacher knows the utilization of technological Equipments in classroom and lab</td>
<td>2.40</td>
</tr>
<tr>
<td>3</td>
<td>Teacher knows the effective use of ICTs.</td>
<td>2.30</td>
</tr>
<tr>
<td>4</td>
<td>Teacher knows the importance of art work in the classroom.</td>
<td>2.85</td>
</tr>
<tr>
<td>5</td>
<td>Teacher appreciates the cultural diversity in the classroom.</td>
<td>2.70</td>
</tr>
<tr>
<td>6</td>
<td>Teacher remains a responsible listener.</td>
<td>2.40</td>
</tr>
<tr>
<td>7</td>
<td>Teacher fosters diversity of opinions among students in the classroom.</td>
<td>2.85</td>
</tr>
</tbody>
</table>
Table II shows mean score of all the competencies related to effective communication and proficient use of ICTs. The overall mean score of 2.55 in this standard falls between 2.50 < 3.00 and this range is related to level-0 (Not demonstrated teacher). Hence, it can be concluded that most of the secondary school teachers did not use ICTs during their classroom teaching. Furthermore, on the bases of analysis of the study it is also concluded that teachers performed poor (in terms of standard-effective communication and proficient use of ICTs) and they need to improve their skills related to ICTs.

The twenty-first century has witnessed phenomenal explosion of knowledge and application of ICTs, accelerating the access to knowledge, enhancing obsolescence of the existing body of knowledge and skills (Westbury, Hansén, Kansanen, & Björkvist, 2005). Good communication helps to build a bridge between students and teachers, enabling teachers to make the subject matter understandable to their students (Edutrends & Allport). This research described that almost one third of the secondary school teachers generally understand the importance of communication skills in teaching. Effective use of information and communication technologies promote effective learning environment. It is also observed that most of the teachers knew little bit about the effective use of information and communication technologies. Questioning technique encourages the proper involvement of students in the teaching-learning process (Chuks & Nebechi, 2016). Using this technique teachers understand the problems of students and also evaluate students learning. When students were asked regarding the utilization of questioning techniques by their teachers during the lectures, majority of the students replied that their teachers seldom used questioning techniques during teaching. A negligible number of students favored that teachers usually used questioning techniques at the end of their lesson. Developing lesson plan was also noted as another weak competency among teachers. During focus group discussions and individual conferences with teachers, most of the teachers were found untrained in preparation of lesson plans. The overall mean score of this standard remained 2.55, which indicated that majority of the teachers were not using ICTs and were rated among poor category of teachers.

**IV. Conclusion**

Despite fact that Pakistan did not adopt the ICTs at an early stage yet National Education Policy 2009 stated clearly that the use of ICTs in Education sector shall be promoted in line with the Ministry of Education’s National Information and Communication Technology Strategy for Education in Pakistan. Information and communication technology is a powerful tool for the development of quality teaching and learning. It is a catalyst for radical change in existing teaching practices and a genuine
vehicle for preparing the students for future. Use of ICTs is the most important factor to improve efficiency and effectiveness of teaching and learning process. Empirically, it is concluded that almost one third of the secondary school teachers understood the importance of communication skills in teaching. Use of ICTs in classroom was also a major concern for teachers, more than half of the teachers know a little bit about the effective use of ICTs, while hardly any teachers were found at desired level of competency. Results of the study further explored that most of the teachers considered that local language helped to understand the content in a better way. More than half of the teachers almost never applied questioning techniques for effective learning. One of the important skills of teachers is the preparation of portfolio of students. Most of the teachers never prepared and updated portfolios of the students and considered that as a useless activity. Majority of the teachers did not know regarding the procedure for the development of a lesson plan. Application of computer for the teachers of the 21st century is utmost necessary. Significant majority of the teachers could not operate and assess students’ test items and assignments through computer in province Punjab, Pakistan. The overall study results of the standard (effective communication and proficient use of information and communication technologies) depicted that more than half of the teachers could not use information and communication technologies (ICTs) in classroom and they were categorized under level-1 (Not demonstrated teachers) which revealed that teachers did not demonstrate competence and they had inadequate growth towards the achievement of the standard.

V. Implications of the study and Future Research Directions

The research study concluded that most of the teachers did not know the utilization of information and communication technologies (ICTs) in classroom and laboratory. When this competency was discussed with school principals, majority of principals were of the view that the teachers’ cluster training centers were not equipped with the latest technological equipment. On the bases of research conclusions, this research suggests that the teachers’ cluster training centers should be equipped with latest technologies so that they may learn to use the information and communication technologies (ICTs) in teaching. Furthermore, this research study also suggests that Ministry of Education, Pakistan should design and conduct workshops for the proper use of ICTs to train the teachers for the better application of ICTs in teaching. Future research may be targeted to assess the status of the standard in other provinces. Similarly, the status of standard in metropolitan cities of Pakistan can also be assessed and compared with the smaller cities and towns, which would be very helpful in policy making.

References


