

PILOT STUDY ON PROCESS EVALUATION OF DHLS PROGRAM CONDUCTED THROUGH REAL VIS-À-VIS VIRTUAL MODES: 2007-08

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Abstract

Distance Learning (DL) is a system and process for providing instruction from a distance. This is distinguished from real or traditional instruction, in which all students are on campus face-to-face with the instructor. There are several misconceptions and misapprehensions regarding DL-especially regarding its newer formats by use of two way live and interactive teleconference modes, use of virtual classrooms and/or such other technology enabled services for teaching and education. The DHLS (Diploma in Hearing, Language and Speech) program initiated at AIISH, Mysore (2007-08) through terrestrial linked two way video-conference mode in 11 centers across the country offers a splendid occasion and opportunity to undertake a comparative process evaluation through real vis-à-vis virtual modes of instruction. By combining the use of a cross sectional multi-group comparison design along with a component of survey and tool development embedded within it, the present study seeks to evaluate interpersonal perceptions between teacher-pupil, their vies on the technology enabled methods of instruction as well as their impact in terms of comparative performance and results in the end annual examination of the students by using appropriate and standardized questionnaires, rating scales and self reporting schedules. Results indicate highly satisfactory mutual ratings both by teacher/supervisors as well as students across real and virtual centers. In terms of the findings on evaluation of the video-conferencing, teachers experience greater problems or glitches related to the use of this technology than the recipient students. Finally, there appears to be no differences in the eventual outcome of results in final examinations between the two modes of distance learning in the field of communication disorders. The implications of the study along with future potential and possibilities for research along these lines are presented and discussed.

Key words: Open Distance Learning – Process Evaluation – Virtual Learning – DHLS Program

Distance Learning (DL) is a system and process for providing instruction from a distance (Bates, 1995). It occurs when a teacher and student are physically separated by real time or space. It reduces, sometimes eliminates, the constraint of space, time and individual differences. There are numerous formats for this instruction. They include courses on audio/video tape; two-way live interactive question answer formats on hotlines, telephones and television, print as well as on World Wide Web. Further, there can be teleconference courses, audio/video conference, correspondence courses, computer based online or web based courses (real

time or delayed) respectively. Contrast this with web based learning or online education where in interactions occur between faculty and students via emails, virtual class rooms, electronic forums, chat rooms, bulletin boards, instant messaging, internet, world wide web, and other forms of computer based communication. A fine line exists between online programs and distance learning courses since it is difficult to call all distance-learning courses as online courses. The technology in both the mode may be different in some cases (Holmberg, 1989).

In practice, each of these formats often include multitude of subsidiary formats (such as, fax, mail or

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telephone) to support teacher-student exchanges of information. Across these formats, DL is a powerful and versatile tool for assisting student learning. It holds unprecedented opportunities for expanding the academic community. It includes distance teaching. The three components of DL are: teacher's role in the process-*distance learning*, and the student's role in the process and the desired outcome-distance education (Verduin & Clark, 1991; Lane, 1992, Willis, 1993).

DL is distinguished from (a) real or traditional instruction, in which all students are on campus face-to-face with the instructor, (b) teach-yourself programs, in which students engage exclusively in independent private study, and (c) other uses of technology in education, such as independent computer-assisted instruction (Keegan, 1986). DL refers to the whole process or system of education (Lane, 1992; Willis, 1993). It refers to the teacher's role in the process of providing instruction at a distance (Lane, 1992; Willis, 1993; Schlosser and Anderson, 1994).

DL models are based on entirely different footing than the brands of traditional education. It is learner centered. The students have to actively discover, create meanings and construct knowledge. They have to be proactive during the learning process. They develop their own thinking. They manage their own learning at their own pace. The teacher is mere facilitator who provides instructional supports. Contrast all this with the traditional system which is teacher centered. The teacher presents knowledge. The student is receptive and reactive during the teaching process. They run according to the pace of the teaching or teacher. The teacher dominates the entire proceedings during the teaching or learning process (Venkatesan, 2007).

DL is an upcoming, untapped and unrecognized agenda in contemporary educational practice. Programs under this mode range from high end options leading to award of doctoral degrees, masters, bachelors and/or graduate, post graduate diplomas or the more modest low end certificate/bridge courses across various disciplines and subjects. It is currently plagued with several startup problems, misconceptions and misapprehensions and misconceptions. A few important mistaken beliefs are given below (Clarke, 1993; Imel, 1998; Inman

and Kerwin, 1999):

- It is not real teaching
- It represents weaker learning
- Effective instruction can/must be live and face-to-face
- Student-faculty interaction is minimized in DL
- Certain subject matter can be taught only in live traditional classrooms.
- Some DL formats eliminate the need for faculty.
- Academic dishonesty among DL students is frequent and uncontrollable.
- DL courses will decrease on-campus enrollments (Barron, 1987; Carl, 1991; Dillon & Walsh, 1992; Moore, 1995).

These misgivings are more a result of functional fixedness in the attitudes of its perpetrators and protagonists. When it comes to the issue of analyzing or understanding issues and problems related to DL, there is need for attitudinal shift in educational planners, policy makers and program implementers. There is mistaken notion on "*change the individual, rather than the system*" orientation in many people (Evans, 1982). This "system-centered" tendency obviously is directly opposed to "student-centered" approach, a characteristic feature of these programs (Phelps, 1991).

The DHLS Program

The DHLS (Diploma in Hearing, Language and Speech) program is aimed at training lower level functionaries in the field of speech and hearing. After the completion of this 10-month course, they are eligible to work as speech and hearing assistants. Their job functions generally include activities like carrying routine screening, assessment and therapeutic management of clients with communication disorders. The location of their work can include Child Guidance Centers, District General Hospitals, Primary Health Centers, Special Schools for Deaf, Inclusion Schools and/or under the ongoing National Program on Prevention and Control of Deafness. They are designated as "Speech and Hearing Assistants". The completion of this course also allows these candidates to gain lateral entry into the graduate level BASLP program.

The entry requirements for this Diploma Program are 10+2 level courses with majors in science

subjects in the age above 17 years. The medium of instruction is English/Hindi or other regional languages. The prescribed course content covering six subjects extends over 400 hours. As recommended by Rehabilitation Council of India (RCI), it contains 40% of total number of working hours on theory and 60% of the time on practical and clinical work. There are prescribed rules and regulations on the designation and teaching experience of the staff, minimum space requirements and equipments or materials required to start or run this program.

For example, it is mandated that the mode of teaching must be in the form of classroom lectures/demonstrations, virtual classes through distance mode supplemented by handouts, manuals, brochures, checklists, proforma, audio-visual tools with supervised clinical practice. There are minimum requirements to be guaranteed by every centre with regard to appointment of at least two lecturers in audiology/speech language pathology with graduate/post graduate level educational qualifications apart from visiting staff as one each clinical/rehabilitation psychologist and, special education teacher. There are minimum requirements of space with specified dimensions for at least one class room, audiometric room, staff/office room, group therapy room, ear mould lab/cum hearing aid workshop, library and two individual therapy rooms respectively. The minimum requirement of equipment / materials include an audiometer, hearing aids of all makes and models, speech trainer, hearing aid repair kit, group hearing aids, sound recorders with CDs and cassettes, therapeutic toys, auditory trainers, models of the ear and larynx, etc. A summary table on prescribed vis-à-vis availability matching of staff, materials, equipments, infrastructure and human resources across sample centers during the period of this study (2007-08) as verified by on site/field inspection by one of the investigators is given under table one.

The DHLS Program is currently being run at 30 centers across the country using traditional mode of instruction wherein batched of 20 students are on campus face-to-face teaching/learning with the instructor/s. The AIISH, Mysore, is the only center which offers this program through terrestrial linked two way video-conference mode in 11 centers across the country (2008-09). This facility was linked to five

centers across the country including the host center (AIISH, Mysore) in the year 2007-08.

With the commencement of DHLS Program through virtual mode at AIISH, Mysore; it becomes pertinent to initiate a simultaneous process evaluation of its efficacy and equivalence with the traditional modes of instruction. Such an evaluation is likely to throw light on the relative merits and demerits of both these modes of instruction as also they may offer useful suggestions for any needed improvisation in the ongoing program. It was the aim of this study to undertake a process evaluation of DHLS program conducted through real vis-à-vis virtual modes of instruction at various centers across the country.

Method

The present study combines the use of a cross sectional multi-group comparison design along with a component of survey & tool development embedded within it.

Sample:

FOUR centers across various zones in the country that run the DHLS Program under the recognition of RCI along with the FOUR study centers under the virtual mode from AIISH, Mysore, were chosen as the target institutions for this multi-centered study. The host center (AIISH, Mysore) may be viewed as a unique entity blending both the features of real and virtual centers since the students are located in front of the teacher as also they can interact and are affected by the under-camera factors that influence participants from the other virtual centers.

Tools & Materials:

Evaluation is recognized as a dynamic scheme for assessing the strengths and weaknesses of programs, policies, personnel, products and organizations to improve their effectiveness (American Evaluation Association, 2002). Process evaluation describes and assesses program materials and activities. Outcome evaluation studies the immediate or direct effects of the program on participants. Impact evaluations look beyond the immediate results of policies, instruction or services to identify long term as well unintended program effects. Regardless of the kind of evaluation, all of them use qualitative as well as quantitative data collected in a systematic manner. In the context of

the aims and objectives of this study, it covered three inter-related but distinct components:

- (a) Teacher-Pupil Evaluation,
- (b) Technology Evaluation, and
- (c) Outcome Evaluation

All these components were covered through development of appropriate measurement tools and

materials. The following measuring instruments were developed as part of this endeavor:

(a) Institution & Infrastructure Profile

This format contained questions to elicit information on or about the participating institution. Some of the included questions related to title of the institution, whether government or private, date of

Sl. No	Variable	PRESCRIBED PER CENTER		AVAILABILITY IN CENTERS	
		Virtual (N: 4)	Real (N: 5)	Virtual (N: 4)	Real (N: 5)
A	STAFF				
	Technical Staff	1	1	5	5
	Speech Therapist/Audiologist	2	2	1	12
	Psychologist-Part Time	1	1	-	5
	Special Education Teacher-Part Time	1	1	-	5
	Internship Students	12	-	12	-
	Host Center Faculty	5	-	5	-
B	MATERIALS/EQUIPMENTS				
	Audiometer & Impedance Audiometer	1	1	14	9
	Specimen Hearing Aids	4 each	4 each	16	.3
	Speech Trainer/Auditory Trainer	1	1	4	5
	Hearing Aid Repair Kit	1	1	-	2
	Group Hearing Aids	1	1	-	4
	Sound Recorders with CD/Cassettes	1	1	2	2
	Therapeutic Toys	1 set	1 set	-	2
	Models of Ear/Larynx & Ear Mould Materials	1 set	1 set	2	4
	Videoconference System	1	-	4	1
	OAE Hand Screen	-	-	4	1
	Spiro Meter	-	-	4	1
	Otto scope	-	-	-	2
	Immittance Meter	-	-	1	-
	Computer	-	-	2	-
	Router Modem	-	-	1	-
C	INFRASTRUCTURE				
	Class Room	1	1	4	5
	Audiometry Room	1	1	4	5
	Staff/office Room	1	1	4	5
	Group Therapy Room	1	1	-	-
	Ear Mould Lab/Hearing Aid Workshop	1	1	4	5
	Library	1	1	4	5
	Individual Therapy Rooms	2	2	4	5
D	TEACHING PRACTICES				
	Lectures/Supervisor	Yes	Yes	Yes	Yes
	OHP/PP Presentations	Yes	Yes	Yes	Yes
	Group Discussions	Yes	Yes	Yes	Yes
	Case Demonstrations	Yes	Yes	Yes	Yes
	Virtual Class Rooms	Yes	-	Yes	Yes
	Hand Outs	Yes	Yes	Yes	Yes
	Self Learning Materials	Yes	-	Yes	-
	Checklists/Scales	Yes	Yes	Yes	Yes
	Supervised Clinical Practice	Yes	Yes	Yes	Yes
	Study Manuals	Yes	Yes	Yes	Yes

Table 1: Prescribed vis-à-vis Availability Matching for Staff, Materials, Equipments, Infrastructure & Human Resource across Centers (2007-08)

establishment, objectives and activities, funding, manpower development courses being run, staff strength and patterns in terms of administrative, technical, professional and part-time, date of commencement of DHLS course, student strength, earlier history of pass-outs, space available, infrastructure, costs, etc.

(b) Teacher-Pupil Evaluation Profiles

This format had questions related to individual teacher-student characteristics in the context of traditional class room and DL teaching procedures. Depending on the background of the given sample, individual teachers and students were administered this Likert type rating scales for responses on individual items. Part A of this questionnaire related to characteristics of the individual teachers (to be blind rated by sub-sample of students), such as, extent or depth of their knowledge, competency in expressive language, approachability through the medium of their instruction (either real or virtual), clarifications or explanations to be able to seek or receive, maintenance of class controls, supervisions possible or otherwise, etc. Part B of this questionnaire comprised of items related to pupil features (to be blind rated by a sub-sample of teachers/supervisors), such as, their classroom participation, ability to ask or answer questions, complete assignments, supervision by distant/remote or near, communicability, responsiveness of pupils, spontaneity, classroom milieu, feeling of familiarity-unfamiliarity, approachability, visibility, convenience for monitoring, etc. In in-house 2-week test retest reliability exercise revealed a correlation coefficient of 0.87 and another inter-rater reliability coefficient between two investigators as 0.91 respectively. Face validity for the instrument was established by circulation between the authors and was found to be high.

(c) Technology Evaluation

The sample of teachers-pupils exposed to virtual format of instruction alone was subjected to this evaluation by means of a rating scale and covering on the technological aspects of the program. Queries covered details on the ease or difficulties in operating the electronic gadgets, need or availability of technical assistance at

hand, trouble shooting, etc. A 2-week test retest reliability exercise revealed a correlation coefficient of 0.71 and concurrent validity between two groups of respondent sub-sample was found to be 0.79.

(d) Outcome Evaluation

This evaluation was carried out in terms of the comparative final examination results of the students across all the centers after completion of their training program. Outcome or summative evaluation in terms of job placements of the successful candidates at the end of this program across all training centers, although initially planned could not be taken before the end of this pilot study. Likewise, cost benefit evaluation in terms of monetizing input-output benefits from this program is another ongoing exercise which will be reported as part of another related study.

Procedure:

Data collection involved visiting or securing filled in questionnaires of respective respondents from four virtual centers (Mumbai, Manipur, Puducherry¹ and Delhi) as well as five regular centers (Pune, Bhopal, Puducherry², Kolkatta and Mysore) across the country. This was carried out after ascertaining that the students as well as teachers have familiarized with each other at least over a period of three months from the startup date of their DHLS program.

Results & Discussion

The results of the study are presented under the following discrete but related headings:

- (a) Pupil Evaluation of Teachers / Supervisors
- (b) Teacher/Supervisor Evaluation of Pupils
- (c) Pupil Evaluation of Technology
- (d) Teacher/Supervisor Evaluation of Technology
- (e) Outcome Evaluation of Results in Final Examinations

(a) Pupil Evaluation of Teachers/ Supervisors

The results on pupil evaluation of teachers/supervisors (Table 2) shows mean total score of 85.49 (SD: 13.6) for staff from virtual centers as compared to a slightly higher score of 94.33 (SD: 7.94) given by students for teachers/supervisors of actual/regular centers. The differences were compared using Mann-Whitney U Test revealed no statistically significant differences for the teachers/

supervisors across both categories of training centers (p: >0.05).

An analysis of individual ratings by students from different centers shows that the highest scores are given by students from Delhi virtual center (Mean: 99.02; SD: 3.06) followed by Pune (regular center) (Mean: 98.97; SD: 0.91), Bhopal (regular center) (93.40; SD: 5.97) and so on. The lowest score ratings are given by students at Manipur virtual center (Mean: 78.64; SD: 6.74) for their teachers and supervisors.

The specific items on which teachers/supervisors were rated 'highly satisfactory' by pupils included their 'extent or depth of knowledge in the subject', 'competency in expressive language', 'updates or recent information on the subject', 'clarifications/explanations for doubts or queries', 'lecture presentations' and 'use of audio visual aids', 'summarizing or paraphrasing', 'dressing and general present ability', 'interest and involvement in class', etc. The items on which was rated as 'not satisfactory' were related to 'approachability or accessibility as a person', 'maintenance of class discipline/controls', 'intelligibility of teacher's voice', etc.

(b) Teacher/Supervisor Evaluation of Pupils:

Conversely, the results of teacher/supervisor evaluation of students (Table 3) shows mean total score of 73.56 (SD 11.85) for pupils from virtual centers as compared to a slightly higher score of 76.00 (SD: 14.92) given by teachers/supervisors of actual/regular centers with no statistically significant differences (p: >0.05).

An analysis of individual ratings by teachers from different centers shows that the highest scores are given by six teachers for students from Pune (regular center) (Mean: 98.96; SD: 0.94) followed by the virtual center in Puducherry (Mean: 80.63; SD: 12.57), virtual center in Mumbai (75.21; SD: 14.06) and so on. The lowest score ratings are given by teacher/supervisors at the regular center in Kolkata (Mean: 61.00; SD: 8.38) for their students in the DHLS program. However, for this sub section, it must be noted that six teachers from virtual centers are the same as compared to different teachers/supervisors for students in the actual/regular centers. Therefore, comparison of teachers/supervisors across all centers may not be tenable as it cannot be done in case of students from these different centers.

The specific items on which students were rated as 'highly satisfactory' by teachers included their interest and involvement in class, class discipline, attendance, punctuality and regularity, attitude to seek guidance, notes taking, etc. The items on which was rated as 'needs improvement' were responsiveness of the students, flexibility, adaptability or ability to change to presentation, openness or free from Inhibition, seeking clarifications/explanations for doubts or queries, interactions between and within students, communicability, asking or answering questions, spontaneity, etc. There were individual differences between the actual content on these ratings about students from different centers. For

Type of Center	Location	N	Pupil Responses towards Teachers				Mean Score*	Standard Deviation
			NS	NI	S	HS		
	Mumbai	18	0	3.6	47.6	48.9	86.33	10.18
Virtual	Manipur	108	0	11.2	63.0	25.8	78.64	6.74
	Puducherry	103	5.4	14.6	35.0	45.0	79.92	16.15
	Delhi	96	0	0.2	3.6	96.3	99.02	3.06
	Pune	150	0	0	4.1	95.9	98.97	0.91
	Bhopal	42	0.1	2.8	20.6	76.6	93.40	5.97
Real	Pondicherry	50	0.3	4.9	60.3	34.5	82.24	10.89
	Kolkotta	17	0	0	15.8	84.2	96.06	2.90
	Mysore-Host	144	0.1	1.1	22.5	76.3	93.75	7.07

(Mann Whitney U Test: Z: 0.98; p: >0.05; NS); KEY: NS: Not Satisfactory, NI: Needs Improvement, S: Satisfactory, HS: Highly Satisfactory; * Calculated by the total of all 25 ratings out of 100 and converted to percentage)

Table 2: Pupil's Evaluation of Teacher/Supervisors

example, if ‘openness’ an ‘free from inhibition’ and ‘communicability’ was rated ‘not satisfactory’ for students from one center, it was ‘poor notes taking behavior’ and ‘asking or answering questions’ which was rated on the same lines at another center. The students at the host center (AIISH) attended classes in the video conference room. They were a part of the whole group of students in the other virtual centers. The overall results on student evaluation of the video-conferencing technology (Table 4) across all four centers (N: 66; Mean: 80.20; SD: 13.49) as compared to similar evaluation from the participating students at the host center (N: 16; Mean: 91.15; SD: 9.73) alone shows a favorable overall mean score against similar ratings from virtual centers at Delhi (N: 16; Mean: 88.85; SD: 10.46), followed by

Mumbai (N: 3; Mean: 76.11; SD: 3.47), Puducherry (N: 13; Mean: 73.72; SD: 11.39) and least ratings by students from Manipur (N: 18; Mean: 68.15; SD: 7.11) respectively.

This implies that Manipur located farthest in the north-east reported greatest dissatisfaction and glitches with video conferencing technology compared to all the other centers across the country. A Kruskal Wallis H test run through these findings showed significant differences between the evaluation by students from different virtual centers on or about the technology (p: <0.001). Further, to study pair wise differences, Mann Whitney U Test was administered between each pair. As a result, significant differences were observed between AIISH hosting center and all other virtual centers except Delhi (p:<0.05). This implies that pupil rating of their experience with video conferencing technology is high and similar for Delhi and the AIISH hosting center, while the mean scores of other virtual centers at Mumbai, Manipur and Puducherry are relatively lower and cluster together (p: <0.001). It must be reiterated that the host center (AIISH-Mysore) (N: 16; Mean: 91.15; SD: 9.73) with the highest score must be viewed as an odd one out because its

Type	Location	N	Teachers Responses towards Pupils				Mean Score*	Standard Deviation
			NS	NI	S	HS		
Virtual	Mumbai	6	0	19.2	60.8	20.0	75.21	14.06
	Manipur	6	0	34.2	61.7	4.2	67.50	8.22
	Puducherry	8	0	12.5	52.5	35.0	80.63	12.57
	Delhi	6	0	30.8	64.2	5.0	68.54	7.64
	Pune	6	0	0	4.2	95.8	98.96	0.94
	Bhopal	5	4.0	24.0	50.0	22.0	72.50	10.31
Real	Pondicherry	5	5.0	20.0	54.0	21.0	72.75	14.64
	Kolkotta	5	6.0	45.0	48.0	1.0	61.00	5.26
	Mysore-Host	9	1.7	13.9	73.9	10.6	72.78	8.38

(Mann Whitney U Test: Z: 0.576; p: >0.05; NS); KEY: NS: Not Satisfactory, NI: Needs Improvement, S: Satisfactory, HS: Highly Satisfactory; *Calculated by the total of all 15 ratings out of 60 and converted to percentage)

Table 3: Teacher/Supervisor Evaluation of Pupils

(a) Pupil Evaluation of Technology

Type	Location	N	Response of Pupils towards Technology				Mean Score*	Standard Deviation
			NS	NI	S	HS		
Virtual	Mumbai	3	0	4.4	86.7	8.9	76.11	3.47
	Manipur	18	1.5	34.8	53.3	10.4	68.15	7.11
	Puducherry	13	6.7	25.1	34.9	33.3	73.72	11.39
	Delhi	16	2.5	5.8	25.4	66.3	88.85	10.46
Actual	Mysore-Host	16	1.3	2.9	25.8	70.0	91.15	9.73

(Kruskal Wallis H Test: X²: (4): 36.192; p: <0.001; VHS); KEY: NS: Not Satisfactory, NI: Needs Improvement, S: Satisfactory, HS: Highly Satisfactory; *Calculated by the total of all 15 ratings out of 60 and converted to percentage)

Table 4: Student Evaluation of Technology

students share the characteristics of, both, real as well as virtual centers.

The specific kind of problems reported by students as ‘needs improvement’ are related to ‘operation of video conference equipments’, ‘electricity and availability of power’, ‘frequency of mechanical breakdown’, ‘intelligibility of teachers voice’, ‘clarity of teachers image or power point presentations’, ‘access to recorded versions’, ‘overall audio/video quality’, ‘visibility of writing on electronic board’, ‘spontaneity and naturalness of classroom situation’, etc.

(d) Teacher/Supervisor Evaluation of Technology

The overall results on teacher/supervisor evaluation of the video-conferencing technology (Table 5) across all five centers (N: 35; Mean: 73.76; SD: 10.43) is lower than student evaluation of the same (N: 66; Mean: 80.20; SD: 13.49). This implies that, on an average, teachers experience greater problems or glitches related to the use of this technology than the recipient students. The specific kind of problems reported by teachers/supervisors are related to ‘operation of video conference equipments’, ‘electricity and availability of power’, ‘frequency of mechanical breakdown’, ‘intelligibility of students voice’, ‘clarity of their images’, ‘comfort level of video conference’, ‘spontaneity and naturalness of classroom situation’, etc.

A Kruskal Wallis H test run through these findings on technology evaluation by the same teacher/supervisors for different virtual centers reveals statistically significant differences (p: <0.001). Further, pair wise differences were studied on Mann Whitney U Test to once again find significant

differences between hosting center and all other virtual centers except Delhi (p:<0.05). This implies that teacher ratings of their experience with video conferencing technology is high and similar for Delhi and hosting center, while the mean scores of other virtual centers at Mumbai, Manipur and Puducherry are relatively lower and cluster together (p: <0.001).

(e) Outcome Evaluation of Results in Final Examinations

Outcome evaluation was carried out in this study only in terms of the comparative final examination results of the students across all the centers following the completion of the training program through virtual mode as against those students for the DHLS program on actual/regular mode (Table 6). An analysis of the findings reveal that while the number of students who took the final DHLS examinations (2007-08) were close to identical for actual/regular centers (N:51) and virtual centers (N:54), there are greater number of ‘distinctions’ (N:3; 6%) as well as ‘failures’ (N:20; 37%) from the latter centers as compared to the former. There are more students passing in first and/or second division from actual/regular centers than their counterparts from virtual centers respectively. On the whole, however, there appears to be no differences in the eventual outcome of results in final examinations between the two modes of distance learning in the field of communication disorders (X²:2.235; df:3.84; p:>0.05; NS with Yates correction)

Summary & Implications

In sum, it may be inferred from the results of this investigation that, on an average, pupil evaluation of their teachers/supervisors is on the higher side for both actual/regular centers as well as virtual centers

Type	Location	N	Responses of Teachers/ Supervisors towards Technology				Mean Score*	Standard Deviation
			NS	NI	S	HS		
Virtual	Mumbai	6	3.3	20.0	67.8	8.9	70.56	5.13
	Manipur	6	3.3	24.4	63.3	8.9	69.44	7.58
	Puducherry	8	2.5	13.3	39.2	45.0	81.67	14.42
	Delhi	6	3.3	24.4	63.3	8.9	69.44	7.58
Real	Mysore-Host	9	2.2	16.3	62.2	19.3	74.63	9.67

(Kruskal Wallis H Test: X²: (4): 3.033; p: >0.05; NS); KEY: NS: Not Satisfactory, NI: Needs Improvement, S: Satisfactory, HS: Highly Satisfactory; *Calculated by the total of all 15 ratings out of 60 and converted to percentage)

Table 5: Teacher/Supervisor Evaluation of Technology.

Centre		Appeared	Number of students			
			Distinction	First Class	Second Class	Fail
Virtual	Mumbai	3	-	-	2	1
	Manipur	19	-	9	3	7
	Puducherry	13	3	9	-	1
	Delhi	19	-	4	4	11
Total (Approx. %)		54 (100)	3 (6)	22 (40)	9 (17)	20 (37)
	Pune	7	-	1	4	2
	Bhopal	7	-	5	2	-
Real	Pondicherry	5	-	3	2	-
	Kolkatta	15	-	9	5	1
	Mysore-Host	17	-	14	3	-
Total (Approx. %)		51 (100)	- (0)	32 (63)	16 (31)	3 (6)

(X²: 2.235; df: 3.84; p: >0.05; NS with Yates correction)

Table 6: Outcome Evaluation of Results in Final Examinations (2007-08)

respectively. This is reciprocated by similar high ratings by teachers/supervisors for their students from both the types of centers although there appears to be slightly lesser scores given by teachers/supervisors for their students than vice versa. In terms of the findings on evaluation of the video-conferencing, teachers experience greater problems or glitches related to the use of this technology than the recipient students. Finally, there appears to be no differences in the eventual outcome of results in final examinations between the two modes of distance learning in the field of communication disorders. It is possible to consider outcome or summative evaluation in terms of job placements apart from only being based on successful performance in final examinations as done in the present study. Likewise, cost benefit evaluation in terms of monetizing input-output benefits is another possible exercise that can be taken as part of another related study. These findings suggest a need to continue a closer and continual monitoring of the scope, functionality, problems, issues and challenges between the traditional and virtual modes of instruction for the DHLS program. It holds promise for expanding this modes of instruction even for higher end programs in the field of communication disorders.

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