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Training Programme Designing in the Field of Disability Rehabilitation: A Comparative Analysis Between Degree and Diploma Program in Special Education (Mental Retardation)

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Abstract: Training programmes in the field of disability rehabilitation are meant with specific goals of improving capability, capacity and performance of trainees who undertake these training programmes and later on impact directly upon the quality of life of persons with disabilities. Designing of any training programme is the most important and essential part of any training. No matter how the training is delivered, at some stage someone will have to sit down and plan what content or course material will be covered, the order it's to be done in and exactly how it is to be delivered is all about the basics of good training design.

Key words: Training, designing, disability, rehabilitation, special education (mental retardation)

INTRODUCTION

The training has now become a very significant part of the management of modern day organizations. The organizations across the world have understood and recognized the role of training in enhancing productivity and improving the overall functioning of the organization, thus, many public sector undertakings and business houses have established their own in-house training infrastructure and built the necessary expertise and facilities to carry out their program of training and development.

However, due to a variety of factors, the value of training has yet to be fully acknowledged in the social development sector. Government and non-government organizations, working in this sector, generally follow a people oriented approach in delivering services. Also, the leadership of Non-Government Organizations (NGOs), especially in developing countries, has generally rested with those who have had long associations with these organizations and have served them with high degree of dedication. The NGOs always looked for people who are driven by a spirit of service and who demonstrate the same commitment to the job as the NGO. And there is a belief that these values cannot be transmitted through training. There was relatively less emphasis on the possession of appropriate competencies in performing the job with efficiency. However, as the functioning of these organizations moves from the traditional mode to a more professional approach, there is increasing recognition of the role training can play in improving the quality of their services and making their programs more client-friendly and cost-effective.

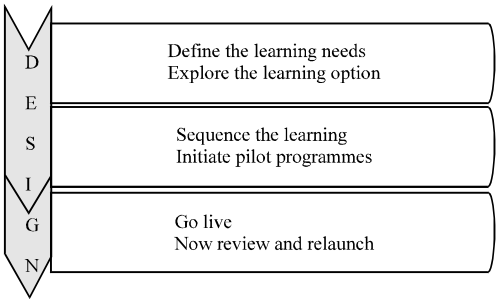

Fig. 1: DESIGN for global corporate diversity by Bray (2006)

Training Programmes in the field of disability rehabilitation are meant with specific goals of improving capability, capacity and performance of trainees who undertake these training programmes and later on impact directly upon the quality of life of persons with disabilities. Designing of any training programme is the most important and essential part of any training. No matter how the training is delivered, at some stage someone will have to sit down and plan what content or course material will be covered, the order it's to be done in and exactly how it is to be delivered is all about the basics of good training design.

Bray (2006) has suggested the following six step design process in order to give a standard, logical format no matter in what location we are at. Many of the issues are covered in depth. An overview of these six steps is as shown in Fig.1.

Six step design process: The purpose of first step, i.e., "Define the Learning Needs" is to define the human

performance requirements in terms of learning needs. In the second step, i.e., "Explore the Learning Options" the objective is to create an outline proposal highlighting options and the proffered course of action. In step three it is mentioned to design the overall flow of the training, i.e., a framework for the training program is developed. Subsequently, in the next step it is mentioned to turn the agreed design proposal into learning products ready for testing in the pilot phase. The purpose of fifth step clearly shows that to move a newly designed and tested product into sustainable delivery. The final step six states that validation is a continuous activity enabling the trainer to report back to the stakeholders on the success of the venture and if there is any gap left it may be addressed and the training may modified accordingly.

Objectives: The present study gives an idea about the designing of training programmes in special education (mental retardation) at degree and diploma level. For this particular study, trainee from D.Ed. Special education (mental retardation) and B.Ed. Special education (mental retardation) programmes were chosen. The specific objectives of this study are as follows:

- To understand the designing of training programmes in special education (mental retardation)
- To understand whether the training programmes are well designed or not
- To compare the opinion difference between D.Ed. and B.Ed. respondents

Literature review: Annett and Duncan (1967) observed that the major problem in task analysis for industrial training is to determine what to describe and on what level of detail. Many different levels of description may be needed to estimate the cost of inadequate performance to a system and the probability of adequate performance without training the problem of identifying difficult components of a job. In the absence of direct empirical measures of these factors, working estimates can be made by appealing to existing methods and concepts. Since, some division of tasks into performance units will be needed for various purposes, training taxonomies are required. Although, taxonomies should include a hierarchy of exhaustive, mutually exclusive categories, each with a specific training requirement, the relative position of such categories can be expected to vary. In respect to actual evaluation of training techniques, evidence on specific training conditions and their applicability is still far from complete. Moreover, task analysis must take into account the environment as well as the content of training.

Baldwin and Ford (1988) mentioned that the transfer of training is of paramount concern for training researchers and practitioners. Despite research efforts, there is a growing concern over the "transfer problem." The purpose of this study was to provide a critique of the existing transfer research and to suggest directions for future research investigations. The conditions of transfer include both the generalization of learned material to the job and the maintenance of trained skills over a period of time on the job. The existing research examining the effects of training design, trainee and work-environment factors on conditions of transfer was reviewed and critiqued. Research gaps identified from the review include the need to:

- Test various operationalization of training design and work-environment factors that have been posited as having an impact on transfer
- Develop a framework for conducting research on the effects of trainee characteristics on transfer. Needed advancements in the conceptualization and operationalization of the criterion of transfer were also discussed.

Bird *et al.* (2005) stated that over the years popularity of resistance training has grown considerably because it has been established that it is an effective method for neuromuscular function and equally effective in maintaining or improving health status of an individual. They also mentioned that the designing of this resistance training program is a very complex process as it incorporates several acute programme variables and key training principles. Also to achieve maximum effectiveness of this training program, manipulation of acute program variables like muscle action, exercise selection and order, repetition, rest period, etc. is required. The reason for this is because, it is the acute programme variables which affect the degree of the resistance training stimuli that determine the magnitude to which the neuromuscular, neuro-endocrine and musculoskeletal systems adapt to both acute and chronic resistance exercise. This study reviewed the available research on the application of acute program variables and their impact on training adaptations and exercise performance. This study gave an important approach to effective program design for resistance exercise which proves to be very important for rehabilitation specialists, strength coaches, etc.

Ford and Wroten (1984) mentioned that while training has been conceptualized as a continually evolving process, the existing literature fails to provide adequate strategies for linking training evaluation to training needs

reassessment and program redesign. This study presented two studies which describe methodologies developed for a police recruit training program to address these deficiencies in the literature. In study 1, Lawshe (1975)'s Content Validity Ratio (CVR) approach was used to establish the job relatedness of the content of the training program. Results supported the job relatedness of the training program as the average CVR value was 27 ($p<05$; N = 105). In study 2, a new methodology, the matching technique was used to directly compare current training emphasis with training needs. Results demonstrated a close match of emphasis and training needs for the training program. One content area of relative training deficiency was further examined to illustrate the power of the matching technique for identifying areas requiring training redesign.

Friend (1985) observed that the teacher trainers are currently faced with the task of designing consultation programs for special education teachers. To make these programs contemporary, effective and relevant for trainees, decisions about their design are best based upon careful examination of a broad range of factors. Three such factors were discussed:

- Characteristics of consultation including existing consultation models applicable to special education situations
- Practitioner needs for consultation information
- Specific consultation skills to include in the training sequence. Information related to each factor was presented in terms of possible alternatives for training program design and trainers were urged to base consultation program development on a broad perspective of the consultation field

Hughey and Mussnug (1997) described the elements of a successful employee training programme in their study. The study also explained the distinction between training and education, along with a discussion of why "soft skills" training initiatives are less effective than skills-based approaches. The authors also discussed the critical role of the training manager in implementing a training programme as well as important considerations when developing a strategic training plan. Finally, they describe several key factors which determine how employee training programmes can best support company profitability.

Kleiner and Drury (1993) designed a training program for metal components inspectors in order to improve their performance. They inspected all the details right from training needs identification, program design, task description and task analysis and finally evaluation. They measured the improvements after the training program on individual as well as plant basis and presented the same to show the success of the program.

Lockhorst *et al.* (2002) while studying the design of a Telematic Learning Environment (TLE) in which student teachers learn collaboratively, considered three clusters of design elements as important: the telematic work environment, the guidance of the instructor and the task instruction. They then checked the way group and task behavior, triggered by these design elements influence the collaborative outcomes. Experiments revealed that the technical environment is not as important as researchers had expected beforehand. This research showed that the task instruction (pre-imposed structure, role taking and intrinsic motivation for the task) and the group process itself have far more impact on the online collaborative work of the student teachers.

Odom and McEvoy (1990) suggested that the mainstreaming is one of several options for providing early intervention services in the least restrictive environment. However, professional and bureaucratic barriers exist to the widespread implementation of mainstreaming at the preschool level. These barriers include the philosophical and theoretical differences between early childhood education and early childhood special education, differences in personnel preparation between the two fields, staff attitudes, issues related to current state regulations and monitoring and provision of related services. In this study, researchers discussed the nature of these barriers, their implications for mainstreamed programs and tasks faced by the field if the barriers are to be overcome.

Riding and Sadler-Smith (1997) stated that in designing learning materials there is often the assumption that all trainees will learn in a similar manner. This approach ignores the important issue of individual differences in cognitive style. Style does not appear to be related to intelligence and reflects qualitative rather than quantitative differences between individuals in their thinking processes. Researchers argued that conventional training design methodologies (whilst acknowledging learning style) appear to lack the theoretical and empirical bases to acknowledge the important role played by cognitive style in determining learning performance. The article aimed to consider the relationship between learning performance, learning strategies and cognitive style and to suggest ways in which human resource development practitioners may accommodate individual differences in style in order that the effectiveness of training and development interventions may be improved.

Simpson *et al.* (1993) focused on preparation of teachers and related services personnel for children and

youth with disabilities in the 21st century. The study included discussions of issues and factors related to the need for changes in special education personnel preparation strategies for responding to current needs including methods of using best practices and innovative training methods and an outcomes-based teacher education model including proposed knowledge and skill training outcomes. This study touched the highlights of what needs to be done to enable special education personnel preparation to meet the challenges of the future.

Scott *et al*. (2003) mentioned that the post secondary education has experienced rapid change in its student population. College students with Learning Disabilities (LD) represent a growing presence on college campuses across the country. Traditional means of meeting the learning needs of college students with LD through retrofitted changes and accommodations to classroom instruction have proven limited. Universal Design for Instruction (UDI) offers a new paradigm for approaching equal educational access. This article described UDI and discussed its implications for enhancing learning for students with learning disabilities and other diverse learners.

Stes *et al*. (2007) mentioned that the long-term influences of educational development initiatives for novice faculty members are seldom studied in a systematic way. In this exploratory study the long-term individual and institutional impact of a novice faculty training programme at the University of Antwerp (Belgium) was evaluated, using a written survey with open questions. The results revealed that 2 years after finishing the programme the respondents still referred to the programme as a means of explaining changes in their day to day teaching practice. No firm relationship could be established between the strength of individual impact and the extent to which respondents also felt inclined to change things at the institutional level. The data suggests that the long-term impact of the programme depends mainly on contextual elements. The study further discussed implications for the design of faculty training as well as perspectives for further research.

Tennant *et al*. (2002) outlined the key areas which manufacturing companies in UK should consider in order to improve the effectiveness of training programmes for their production operators. Researchers carried out a study to identify current evaluation methods and identify the predominant barriers to the implementation of effective training programmes. The research concluded that most of the companies believed that their training programmes did not realize the full potential in terms of improved quality, better on the job performance and higher productivity. Researcher also proposed a training program measurement model which other manufacturing companies may use for conducting evaluation studies. Researchers also suggested few areas for future research for manufacturing companies.

Gaps identified in literature review: From the literature review it is observed that lot of studies have been conducted focusing on the designing of training programs in different fields. But no specific study was found during literature review in the field of disability rehabilitation. Also, the field of disability rehabilitation is an upcoming field and people are undertaking these rehabilitation programs as professional careers. So this study will try to put some light on the designing of training programs in the field of disability rehabilitation through a comparative analysis between degree and diploma programs in special education.

MATERIALS AND METHODS

Two different questionnaires were developed each for special D.Ed. (MR) training programme and special B.Ed. (MR) training programme. Responses were collected from 84 special D.Ed. (MR) trainees and 68 special B.Ed. (MR) trainees from Mumbai and Pune cities of Maharashtra state.

Sample size: The 84 special D.Ed. (MR) trainees and 68 special B.Ed. (MR). Total 84+68 = 152

Data collection: Data for the study was collected through questionnaires which were developed by the researcher. The questionnaire filling process was carried out personally by the researcher himself. The survey was pre-scheduled as per the convenience of the respondents. This scheduling was done in collaboration with the respective course coordinators and head of the institutes. The researcher thoughtfully explained the questionnaire to the respondents in the best possible way so that honest responses may be generated from the respondents. The filled questionnaires were personally collected by the researcher himself.

Data analysis: Data was analyzed using various appropriate statistical tools and techniques. SPSS version 16.0 was used for all the analysis for this study.

Hypothesis development and testing

Hypothesis related to design of programme: Every programme is designed with some defined objectives. It is expected that students going through the programme has

some learning objectives as well the program designer also expect trainees to learn some precise and defined goals. Considering this fact response based study is carried out to test whether programs are well designed or not. Questions related to program design were asked to the Trainees who are taking these programmes. Since, we have taken two different levels of programmes, i.e., degree and diploma level, both have different learning objectives and hence questions in questionnaire are also framed by considering this fact.

Hypothesis:

- H_{01}: the training programmes are not well designed
- H_{11}: the training programmes are well designed

This hypothesis is tested individually for B.Ed. trainees and D.Ed. trainees first and then comparison was also made between responses from both the groups by considering the latent variable generated by considering all design related variables. Since, responses from respondents are collected on five point Likert scale, we converted this data to dichotomous data as disagree and agree. We included the response somewhat disagree to disagree for making precise category of those who either agree or completely agree. The proportion of agree is then tested with possible division of 50%.

D.Ed. trainee's response study

Frequency distribution: A frequency distribution is a table that displays the frequency of various outcomes in a sample. Each entry in the table contains the frequency or count of the occurrences of values within a particular group or interval and in this way, Table 1 summarizes the distribution of values in the sample.

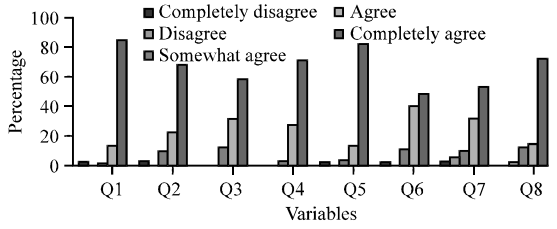

Fig. 2: Graphical representation of D.Ed. trainee's percentage distribution for design variable

Percentage distribution: A percentage distribution is used to present data in a condensed manner. But instead of showing an actual number of occurrences of values with in an interval, it shows the occurrences in that interval as a percentage of the total number of occurrences in the set. Table 2 shows the percentage of responses taken from D.Ed. trainees through the questionnaire.

Figure 2 shows the D.Ed. trainee's percentage distribution for design variable through graphical representation and this graphical representation clearly shows that maximum number of respondents is completely agreeing to the fact that the training program is well designed.

Null hypothesis: The proportion of respondents those who agree that training programs are well designed are almost 50%.

Alternative hypothesis: The proportion of respondents those who agree that training programs are well designed are significantly more than 50%.

Interpretation: Since, p-value for the Z-test (Table 3) is less than that of 0.05 we should reject null hypothesis and conclude that the proportion of respondents those who agree that training programs are well designed is significantly >50%.

Table 1: D.Ed. trainee's count distribution for design variable

Variables	Completely disagree	Disagree	Somewhat agree	Agree	Completely agree
Q1	2	0	1	11	70
Q2	2	0	8	18	56
Q3	0	0	10	26	48
Q4	0	0	2	23	59
Q5	2	0	3	11	68
Q6	2	0	9	33	40
Q7	2	4	8	26	44
Q8	0	2	10	12	60

Table 2: D.Ed. trainee's percentage distribution for design variable

	Completely disagree	Disagree	Somewhat agree	Agree	Completely agree		
Variables	Row (N %)	Row (N %)	Row (N %)	Row (N %)	Row (N %)	Disagree (%)	Agree (%)
Q1	2.4	0.0	1.2	13.1	83.3	3.60	96.40
Q2	2.4	0.0	9.5	21.4	66.7	11.90	88.10
Q3	0.0	0.0	11.9	31.0	57.1	11.90	88.10
Q4	0.0	0.0	2.4	27.4	70.2	2.40	97.60
Q5	2.4	0.0	3.6	13.1	81.0	6.00	94.00
Q6	2.4	0.0	10.7	39.3	47.6	13.10	86.90
Q7	2.4	4.8	9.5	31.0	52.4	16.70	83.30
Q8	0.0	2.4	11.9	14.3	71.4	14.30	85.70

Table 3: Z-test for design variable

Z-test for	Disagree		Agree				p-value	
the proportion	Count	Percentage	Count	Percentage	Total count	Z-test statistic	(greater than type)	Decision
Q1	3	3.60	81	96.40	84	8.510498	0.00000	Reject
Q2	10	11.90	74	88.10	84	6.982972	0.00000	Reject
Q3	10	11.90	74	88.10	84	6.982972	0.00000	Reject
Q4	2	2.40	82	97.60	84	8.728716	0.00000	Reject
Q5	5	6.00	79	94.00	84	8.074062	0.00000	Reject
Q6	11	13.10	73	86.90	84	6.764755	0.00000	Reject
Q7	14	16.70	70	83.30	84	6.110101	0.00000	Reject
Q8	12	14.30	72	85.70	84	6.546537	0.00000	Reject

Table 4: B.Ed. trainee's count distribution for design variable

Variables	Completely disagree	Disagree	Somewhat agree	Agree	Completely agree
Q1	0	4	30	21	13
Q2	0	0	4	35	29
Q3	0	0	18	36	14
Q4	0	2	21	29	16
Q5	0	0	1	18	49
Q6	0	0	7	28	33
Q7	0	0	4	39	25
Q8	0	0	4	42	22

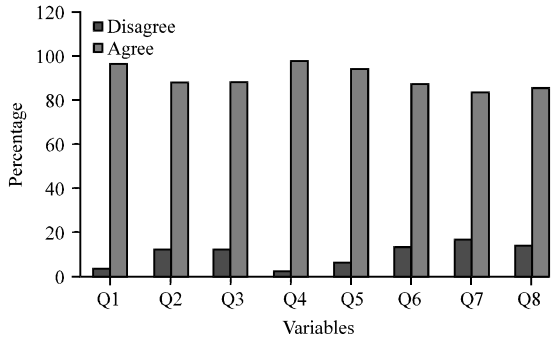

Fig. 3: Graphical representation showing the distribution of responses

Graph showing the distribution of responses: Figure 3 clearly shows that the percentage of respondents who agree that the program is well designed is quite significant as compared to those who don't agree.

Since for all design related questions, the proportion of those who agree that training programs are well designed is significant. We conclude according to diploma students program is well designed.

B.Ed. student's response study

Frequency distribution: A frequency distribution is a table that displays the frequency of various outcomes in a sample. Each entry in the table contains the frequency or count of the occurrences of values within a particular group or interval and in this way, Table 4 summarizes the distribution of values in the sample

Percentage distribution: A percentage distribution is used to present data in a condensed manner. But instead

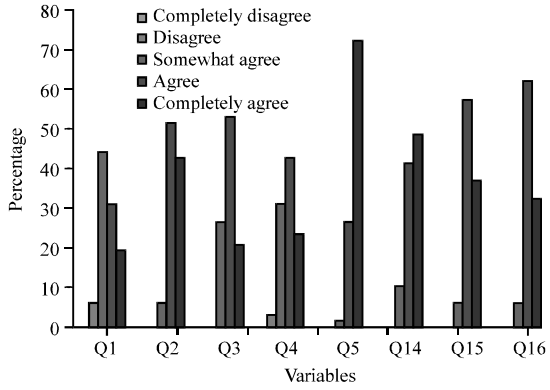

Fig. 4: Graphical representation of percentage distribution

of showing an actual number of occurrences of values with in an interval, it shows the occurrences in that interval as a percentage of the total number of occurrences in the set. Table 5 shows the percentage of responses taken from B.Ed. trainees through the questionnaire.

Figure 4 shows the B.Ed. trainee's percentage distribution for design variable through graphical representation and this graphical representation shows that the number of respondents who agree that the program is well designed is significant in most of the questions except Q1 where the maximum respondents were not sure of it.

Statistical hypothesis

Null hypothesis: The proportion of respondents those who agree that training programmes are well designed are almost 50%.

Alternative hypothesis: The proportion of respondents those who agree that training programmes are well designed is significantly >50%.

Interpretation: Since, p-value for the Z-test (Table 6) is less than that of 0.05 we should reject null hypothesis and conclude that the proportion of respondents those who agree that training programme is well designed is significantly more than 50% except for variable Q1.

Table 5: B.Ed. trainee's percentage distribution for design variable

	Completely disagree	Disagree	Somewhat agree	Agree	Completely agree		
Variables	Row (N %)	Row (N %)	Row (N %)	Row (N %)	Row (N %)	Disagree (%)	Agree (%)
Q1	0.0	5.9	44.1	30.9	19.1	50.00	50.00
Q2	0.0	0.0	5.9	51.5	42.6	5.88	94.12
Q3	0.0	0.0	26.5	52.9	20.6	26.47	73.53
Q4	0.0	2.9	30.9	42.6	23.5	33.82	66.18
Q5	0.0	0.0	1.5	26.5	72.1	1.47	98.53
Q6	0.0	0.0	10.3	41.2	48.5	10.29	89.71
Q7	0.0	0.0	5.9	57.4	36.8	5.88	94.12
Q8	0.0	0.0	5.9	61.8	32.4	5.88	94.12

Table 6: Z-test for design variable

	Disagree		Agree					
Z-test for the proportion	Count	Percentage	Count	Percentage	Total count	Z-test statistic	p-value (greater than type)	Decision
Q1	34	50.00	34	50.00	68	0.00	0.500	Do not reject
Q2	4	5.88	64	94.12	68	7.28	0.000	Reject
Q3	18	26.47	50	73.53	68	3.88	0.000	Reject
Q4	23	33.82	45	66.18	68	2.67	0.004	Reject
Q5	1	1.47	67	98.53	68	8.00	0.000	Reject
Q6	7	10.29	61	89.71	68	6.55	0.000	Reject
Q7	4	5.88	64	94.12	68	7.28	0.000	Reject
Q8	4	5.88	64	94.12	68	7.28	0.000	Reject

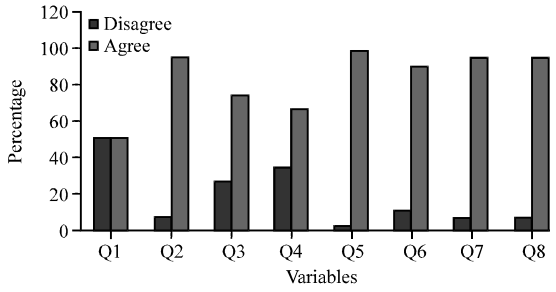

Fig. 5: Graphical representation showing the distribution of responses

Graph showing the distribution of responses: Since, for all design related variables except Q1 (proportion is 50%) (Fig. 5), the proportion of those who agree that training program is well designed is significant. We conclude according to diploma students program is well designed.

Comparison of opinion difference between D.Ed. and B.Ed. respondents: The difference between the respondents at diploma and degree level is tested by generating new single variable from the related question. We name this variable as design variable. The significance of difference between these two variables is tested.

Variable design for D.Ed. students is obtain by calculating factor score using factor analysis procedure as well as by obtaining median of the scores for each respondent on all design related questions, similarly variable design for B.Ed. students is generated by carrying out factor analysis procedure as well as by obtaining median of the scores for each respondent on design related questions from questionnaire used for B.Ed.

Statistical hypothesis

Null hypothesis: D.Ed. and B.Ed. students do not differ significantly for their opinion on "training programmes are well designed".

Alternate hypothesis: D.Ed. and B.Ed. students differ significantly for their opinion on "training programmes are well designed".

Comparison by using factor loading

Sum of rank table: We use mean rank to compare two groups, i.e., D.Ed. and B.Ed. in this study and rank sum test can be used to test null hypothesis that two populations have the same continuous distribution. Table 7 represents the mean rank and sum of mean ranks calculated for each item in the questionnaire designed for respondents on the basis of design of the program. For B.Ed. trainees the mean rank is calculated as 73.5 and for D.Ed. trainees it is calculated as 78.93.

Graph for mean rank Figure 6 represents the graphical representation of mean ranks calculated on the basis of responses from both the groups.

Mann-whitney U-test: The Mann-Whitney test first ranks all the values from low to high and then compares the

Table 7: Sum of rank table for design variable

Groups	N	Mean rank	Sum of ranks
B.Ed.	68	73.50	4998.00
D.Ed.	84	78.93	6630.00
Total	152		

Table 8: Man-whitney U-test for design variable

Test statistics

Variables	Design of training programme
Mann-whitney U	2652.000
Wilcoxon W	4998.000
Z-test	-0.756
p-value	0.450

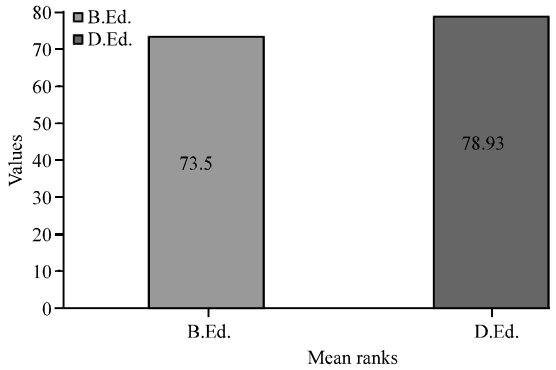

Fig. 6: Graphical representation of mean rank

mean rank of the two groups. This option creates a Table 7, 8 and Fig. 6 showing those ranks. The Wilcoxon first computes the difference between each pair and then ranks the absolute value of those differences, assigning negative values when the difference is negative.

Interpretation: Since, p-value for the Mann-whitney U-test is >0.05 we should accept null hypothesis and hence we can conclude that D.Ed. and B.Ed. students do not differ significantly for their opinion on "training programmes are well designed".

RESULTS AND DISCUSSION

It is found that the proportion of respondents who agree that training program is well designed is significantly >50%. It is concluded from the analysis that according to the trainees of special B.Ed. (MR) training program and special D.Ed. (MR) training program that the program is well designed. It is also found that trainees of special B.Ed. (MR) and special D.Ed. (MR) training programs do not differ significantly on their opinion about the design of the program, i.e., both are of the view that training programs are well designed.

CONCLUSION

The present study is a comparative analysis between two different training programs viz. B.Ed. Special education (mental retardation) and D.Ed. Special education (mental retardation) on the basis of their designing. Analysis revealed that the trainees undergoing these training programs are of the view that the training programs are well designed and are as per the objectives of the said training program.

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