Chapter 6
Conclusion, Educational Implications and Suggestions

6.0 Introduction

This chapter presents the conclusions, educational implications of the study and suggestions for future researches.

6.1 CONCLUSION

The study aimed to develop a Multi-skill training module in AAC for caregivers and study the effect of AAC training on caregivers ability to develop language and communication in children with developmental disabilities and the effect of AAC usage on the development of language and communication skills in children with developmental disabilities. The study also aimed to study the effect of training module on the caregiver’s perception towards use of AAC.

The following conclusions have emerged from within the scope of the study analyzed therein:

1. **Augmentative and Alternative Communication (AAC) training will enhance the mean score on the language teaching behavior of caregivers from pre to post test.**

   The t value=48.555; level of significance at 0.001 led to retention of hypothesis 1 “Augmentative and Alternative Communication (AAC) training will enhance the mean score on the language teaching behavior of caregivers from pre to post test.”

1a. **Mean score on signing behavior of caregivers who receive AAC training will increase significantly from pre to post test.**

   The t value=40.853; level of significance at 0.001 led to retention of hypothesis a “Mean score on signing behavior of caregivers who receive AAC training will increase significantly from pre to post test.”
1b. **Mean score on usage of alternative modes for comprehension of caregivers who receive AAC training will increase significantly from pre to post test.**

The t value=27.928; level of significance at 0.001 led to retention of Hypothesis 1b “Mean score on usage of alternative modes for comprehension of Caregivers who receive AAC training will increase significantly from pre to posttest.”

1c. **Mean score on facilitation of communication by caregivers who receive AAC Training will increase significantly from pre to post test.**

The t value=21.453; level of significance at 0.001 led to retention of hypothesis 1c “Mean score on facilitation of communication by caregivers who receive AAC training will increase significantly from pre to post test.”

1d. **Mean score on communication style of caregivers who receive AAC training will increase significantly from pre to post test.**

The t value=17.913; level of significance at 0.001 led to retention of hypothesis 1d “Mean score on communication style of caregivers who receive AAC training will increase significantly from pre to post test.”

2. **Mean score on language teaching behavior of caregivers who receive AAC training will be significantly higher than those who do not receive the training.**

The t value=29.846; level of significance at 0.001 led to retention of the Hypothesis 2 “Mean score on language teaching behavior of caregivers who receive AAC training will be significantly higher than those who do not receive the training.”
2a. **Mean score on signing behavior of caregivers who receive AAC training will be significantly higher than those who do not receive the training**

The t value=22.972; level of significance at 0.001 led to retention of the hypothesis 2a “Mean score on signing behavior of caregivers who receive AAC training will be significantly higher than those who do not receive the training .

2b. **Mean score on usage of alternative modes for comprehension of caregivers who receive AAC training be significantly higher than those who do not receive the training**

The t value=15.445; level of significance at 0.001 led to retention of the hypothesis 2b “Mean score on usage of alternative modes for comprehension of caregivers who receive AAC training be significantly higher than those who do not receive the training.”

2c. **Mean score on facilitation of communication by caregivers who receive AAC Training will be significantly higher than those who do not receive the Training**

The t value=12.813; level of significance at 0.001 led to retention of the Hypothesis 2c “Mean score on facilitation of communication by caregivers who receive AAC training will be significantly higher than those who do not receive the training”

2d. **Mean score on communication style of caregivers who receive AAC training Will be significantly higher than those who do not receive the training**

The t value=13.629; level of significance at 0.001 led to retention of hypothesis 2d “Mean score on communication style of caregivers who receive AAC training will be significantly higher than those who do not receive the training”
3. **Caregivers who receive AAC training will have a positive opinion about it.**

The percentage of caregivers with a positive opinion (97%) on AAC led to retention of the hypothesis “Caregivers who receive AAC training will have a positive opinion about it”

4. **Children with disabilities who receive AAC training will significantly improve their mean score on receptive and expressive language from pre to posttest.**

The t value=32.121; level of significance at 0.001 led to retention of hypothesis 4 “Children with disabilities who receive AAC training will significantly improve their mean score on receptive and expressive language from pre to posttest.”

4a. **AAC training will significantly improve the mean score on comprehension of nouns of children with disabilities from pre to posttest.**

The t value=46.523; level of significance at 0.001 led to retention of hypothesis 4a “AAC training will significantly improve the mean score on comprehension of nouns of children with disabilities from pre to posttest”

4b. **AAC training will significantly improve the mean score on comprehension of action words of children with disabilities from pre to posttest.**

The t value=31.939; level of significance at 0.001 led to retention of hypothesis 4b “AAC training will significantly improve the mean score on comprehension of action words of children with disabilities from pre to posttest.”
4c. **AAC training will significantly improve the mean score on comprehension of locative words of children with disabilities from pre to posttest.**

The t value=17.949; level of significance at 0.001 led to retention of hypothesis 4c “AAC training will significantly improve the mean score on comprehension of locative words of children with disabilities from pre to posttest”

4d. **AAC training will significantly improve the mean score on comprehension of descriptive words of children with disabilities from pre to posttest.**

The t value=18.869; level of significance at 0.001 led to retention of hypothesis 4d “AAC training will significantly improve the mean score on comprehension of descriptive words of children with disabilities from pre to posttest”.

4e. **AAC training will significantly improve the mean score on comprehension of simple commands of children with disabilities from pre to posttest.**

The t value=38.037; level of significance at 0.001 led to retention of hypothesis 4e “AAC training will significantly improve the mean score on comprehension of simple commands of children with disabilities from pre to posttest”.

4f. **AAC training will significantly improve the mean score on expression of nouns of children with disabilities from pre to posttest.**

The t value=21.606; level of significance at 0.001 led to retention of hypothesis 4f “AAC training will significantly improve the mean score on expression of nouns of children with disabilities from pre to posttest.”
4g. **AAC training will significantly improve the mean score on expression of Action words of children with disabilities from pre to posttest.**

The t value=22.302; level of significance at 0.001 led to retention of hypothesis 4g “AAC training will significantly improve the mean score on expression of action words of children with disabilities from pre to posttest.”

4h. **AAC training will significantly improve the mean score on expression of Locative words of children with disabilities from pre to posttest.**

The t value=13.610; level of significance at 0.001 led to retention of hypothesis 4h “AAC training will significantly improve the mean score on expression of locative words of children with disabilities from pre to posttest.”

4i. **AAC training will significantly improve the mean score on expression of descriptive words of children with disabilities from pre to posttest.**

The t value=12.618; level of significance at 0.001 led to retention of hypothesis 4i “AAC training will significantly improve the mean score on expression of descriptive words of children with disabilities from pre to posttest”

4j. **AAC training will significantly improve the mean score on expression of Simple commands of children with disabilities from pre to posttest.**

The t value=20.964; level of significance at 0.001 led to retention of hypothesis 4j “AAC training will significantly improve the mean score on expression of simple commands of children with disabilities from pre to posttest.”

5. **The mean score on the language skills of children with disabilities who receive AAC training will be significantly higher than those who do not.**

The t value=32.121; level of significance at 0.001 led to retention of hypothesis 5 “The mean score on the language skills of children with disabilities who receive
AAC training will be significantly higher than those who do not.”

5a. The mean score on the comprehension of nouns in children with disabilities who receive AAC Training will be significantly higher than those who do not.

The t value=38.836; level of significance at 0.001 led to retention of hypothesis 5a “The mean score on the comprehension of nouns in children with disabilities who receive AAC Training will be significantly higher than those who do not.”

5b. The mean score on the comprehension of action words in children with Disabilities who receive AAC Training will be significantly higher than those who do not.

The t value=28.995; level of significance at 0.001 led to retention of hypothesis 5b “The mean score on the comprehension of action words in children with disabilities who receive AAC Training will be significantly higher than those who do not.”

5c. The mean score on the comprehension of locative words in children with disabilities who receive AAC Training will be significantly higher than those who do not.

The t value=16.518; level of significance at 0.001 led to retention of hypothesis 5c “The mean score on the comprehension of locative words in children with disabilities who receive AAC Training will be significantly higher than those who do not.”

5d. The mean score on the comprehension of descriptive words in children with disabilities who receive AAC Training will be significantly higher than those who do not.

The t value=17.915; level of significance at 0.001 led to retention of hypothesis 5d “The mean score on the comprehension of descriptive words in children with
disabilities who receive AAC Training will be significantly higher than those who do not.”

5e. **The mean score on the comprehension of simple commands in children with disabilities who receive AAC Training will be significantly higher than those who do not.**

The t value=35.691; level of significance at 0.001 led to retention of hypothesis 5e “The mean score on the comprehension of simple commands in children with disabilities who receive AAC Training will be significantly higher than those who do not.”

5f. **The mean score on the expression of nouns by children with disabilities who receive AAC Training will be significantly higher than those who do not.**

The t value=20.051; level of significance at 0.001 led to retention of hypothesis 5f “The mean score on the expression of nouns by children with disabilities who receive AAC Training will be significantly higher than those who do not.”

5g. **The mean score on the expression of action words by children with disabilities who receive AAC Training will be significantly higher than those who do not.**

The t value=20.410; level of significance at 0.001 led to retention of hypothesis 5g “The mean score on the expression of action words by children with disabilities who receive AAC Training will be significantly higher than those who do not.”

5h. **The mean score on the expression of locative words by children with Disabilities who receive AAC Training will be significantly higher than those who do not.**

The t value=13.003; level of significance at 0.001 led to retention of hypothesis 5g “The mean score on the expression of locative words by children with disabilities who receive AAC Training will be significantly higher than those who do not”.
5i. The mean score on the expression of descriptive words by children with Disabilities who receive AAC Training will be significantly higher than those who do not.

The t value = 12.471; level of significance at 0.001 led to retention of hypothesis 5i “The mean score on the expression of descriptive words by children with disabilities who receive AAC Training will be significantly higher than those who do not.”

5j. The mean score on the expression of simple commands by children with disabilities whose caregivers receive AAC Training will be higher than those whose caregivers did not receive training.

The t value = 20.676; level of significance at 0.001 led to retention of hypothesis 5j “The mean score on the expression of simple commands by children with disabilities whose caregivers receive AAC Training will be higher than those whose caregivers did not receive training.”

6.2 Implications

Children with developmental disabilities often experience distress from communication deficits. This in turn affects the academic, social, and behavior outcomes in these children. The aim of rehabilitation is to maximize every child’s potential, facilitate social inclusion, help the child be a productive member of the society and thereby reduce the liability and vulnerabilities. Children with developmental disabilities often do not acquire speech and therefore may adopt an alternative mode of communication such as gross gestures, facial expressions and body language. While they serve the immediate needs of the individuals, they are limited in scope in terms of communicating with multiple communicative partners and contexts. In such a situation, there arises a need to provide a more stable means of communication to children with communication difficulties. The concept of Augmentative and Alternative communication (AAC) has historically had a mixed perception from professionals and users. However in the last two decades, a plethora of studies have consistently demonstrated the positive effects and gains from use of
AAC by individuals with developmental disabilities. Use of AAC has enhanced the language and interaction skills of individuals with developmental disabilities and therefore has a significant bearing on the quality of life of the individual and his family. At the same time implementation of AAC continues to face challenges.

In India, though numerous policies and legislations have been introduced to steer towards better rehabilitation of individuals with developmental disabilities, the ground reality of implementation has been an uphill task. The socioeconomic aspects of the population continue to indicate the need to redesign and develop programs and strategies that would be practical, viable and serve the purpose at the ground level. This is especially true of AAC implementation.

Successful implementation of AAC requires knowledge, skill and resources to cater to the varied needs and contexts of individuals with developmental disabilities. No tech or low tech AAC systems are realistic options to make AAC accessible and available to a good proportion of potential AAC users in India in the absence of adequate financial resources and funding supports. An equal area of concern is the wide variations in knowledge and skill level leading to poor or ineffective implementation of AAC.

Therefore development of a training module for effective AAC implementation will help in building capacities in a uniform consistent manner and thus ensure successful and effective AAC implementation. Numerous training programs have been initiated to serve this purpose. But there is a need for an indigenous AAC training program suited to the socio economic and cultural context of India. The fact that an AAC training program has far reaching effects on AAC implementers and individuals with developmental disabilities is proved by this study. This study has implications for rehabilitation professionals including therapists, educators, para educators and community working with caregivers and children with developmental disabilities.
Rehabilitation personnel:

Therapist or educators are the professionals frequently working with children with developmental disabilities on a regular basis. They are involved in developing individualized intervention programs and providing ongoing support and guidance to families during the developmental years of the child with developmental disability. In reality, the demand for professionals has been higher than the supply. Therefore, the intensity and frequency of interventions available have been far from ideal. In an attempt to meet the demands of rehabilitation, on one hand, numerous training programs have been developed and organized with the aim of generating manpower resources, and on the other, paraeducators, volunteer support staff, unskilled workers have been absorbed, and ad hoc training and orientation provided on the job. Introduction of training courses has definitely generated manpower but has also kindled the search for greener pastures. This has put the services at the grassroots level back on a limbo. While ad hoc absorption of manpower has been taken in good faith to cater to the growing needs and demands of organizations serving special needs population, the outcomes have been highly variable and inconsistent. This can be attributed to the individual variations in knowledge and skill level, thereby dampening the outcomes of services and programs. While the urgency and desperation for provision of services is palpable, it seems to have assumed a philosophical outlook of “something better than nothing”.

From an ideological perspective, there is considerable research evidence, which support involvement of caregivers in intervention and thereby is a dependable solution to manpower issues in rehabilitation. Research has demonstrated family members and caregivers’ involvement and skills as co-therapists and educators to have a significant bearing on the development of skills across domains in children with developmental disabilities. The roles of caregivers and paraeducators for children with disabilities have changed significantly from being teacher aides who provide clerical assistance to being support personnel in the areas of instruction, tutoring, and management of classroom behavior (Harrington & Mitchelson, 1986; Jones & Bender, 1993; Pickett, 1997). A critical consideration is the level of training, given that caregivers and paraeducators are typically responsible for ensuring that
students with disabilities have access to and are able to effectively utilize AAC devices.

Several implications can be gleaned from this research. Firstly, that a specific training in AAC is effective in developing knowledge and skills of caregivers. While there is considerable research, which shows that AAC training is effective, there is a paucity of training modules, which are specific to AAC. Training programs have predominantly been informative ranging from giving an orientation of what is AAC to discussions about the processes and strategies used in AAC. The training module developed through this research not only provides an orientation and information about AAC, types, processes and strategies but also provides hands on practical training. Secondly, the distinct characteristics of the AAC training module are it is short in duration, specific to AAC and can be conducted in the naturalistic familiar context of caregivers and children with developmental disabilities. The training provides opportunity to adapt AAC into the rehabilitation services and has the scope for AAC immersion in the community.

Thirdly the study implies that a transdisciplinary approach to AAC service is an effective, viable approach and it can play a significant role in consolidating the otherwise fragmented AAC service in the community. Role release has the potential to build and expand AAC services across the community and caregivers can become active participants in rehabilitation and facilitate communication and complement and supplement the inputs of professionals. While the current status in rehabilitation demands need for manpower and continuity and consistency of services, the evidence from this study provides added impetus to principals and administrators of schools and rehabilitation organizations to adopt a transdisciplinary approach and provide effective services to families and children with developmental disabilities.

Children with Developmental Disability

Communication difficulties pervade across individuals every life activity that is otherwise taken for granted. It has a wide-ranging impact on the individual’s social, academic and independent living skills. Therefore providing a means of communication is not only a need but also a community responsibility. Access to a
means to communicate and opportunities will enhance the individual’s life skills and thereby enhance the quality of life for the family and community at large. Research has consistently shown the distressing outcomes due to communication difficulties in children with developmental disabilities and the promising benefits of introducing AAC for these children. In spite of this rising evidence access to and opportunities to a means of communication has been inadequate, inconsistent and fragmented.

This study not only provides evidence to the significant benefits of AAC to children with developmental disabilities but also demonstrates an effective way of making it available to those with communication deficits. The study demonstrates the immense language potential that can be harnessed in children with developmental disability through AAC which have a significant bearing on the long term outcomes and life skills of these children.

6.3 SUGGESTIONS FOR FUTURE RESEARCHES

The present study was conducted under constraints of time and resources. In order to provide more empirical support to the findings of this study, further research should be undertaken. Suggestions for the same are proposed below:

- A study may be undertaken on a large sample drawn from different special education centers in order to facilitate generalization of the result to the target population.
- A longitudinal study of impact of AAC intervention on children with developmental disability may be conducted at different stages of development.
- A study may be conducted to analyze the effects of AAC across multiple domains such as social and behavior in children with developmental disabilities.
- A research may be conducted extending beyond the intervention phase and assess long-term benefits of AAC implementation. In addition to assessing maintenance and generalization, information regarding the collateral effects associated with AAC intervention should be compiled.
- Future research should strive for consistency in applying AAC to help isolate which factors determines effectiveness.
- A study can examine the use of AAC in small and large group situations.
• A research may be conducted using modified methods of AAC implementation (e.g. training through teleconferencing).
• Future research is required to evaluate the role of other members in the community in AAC intervention.
• Additional research is needed to help determine if additional factors, such as the role of education, socio economic status and rural versus urban factors plays a role in AAC effectiveness.