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# Assistive Technology Services in Sped Schools

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**Abstract**

This study identifies the assistive technology services of SPED Centers in Cebu. SPED teachers, parents, and administrators respond to a standardized questionnaire, FGD, and interviews to determine the adequacy level of assistive technology services of public and private Sped Centers in Cebu in terms of Referral, Evaluation, and Extended Assessment, Plan Development, Implementation, and Periodic Review. The first result shows no significant difference between teachers' and parents' perceptions of the adequacy of SPED centers in Cebu, a total of 3.086 T-value. The second result shows no significant relationship between the teachers' adequacy in integrating assistive technology services in SPED schools and the teachers' qualifications, a total of 2.080 Critical T-value. The third result shows no significant relationship between teachers' adequacy and teachers' experiences in integrating assistive technology, a total of 2.080 Critical T-value. Therefore, this study concludes that the assistive technology services given to special education centers in public and private schools were adequate based on the six components identified. Henceforth, this study recommends that the DepEd include provisions in training SPED teachers in using assistive technology. Likewise, the parents must be assistive technology, and the schools catering to special needs must have an Individualized Education Plan (IEP).

**Keywords:** Assistive Technology Services, SPED Schools, IDEA & Extended Assessment

## I. INTRODUCTION

Assistive technology is a device used by individuals with disabilities (Brant & Bryant, 2003). It allows individuals with disabilities to perform inclusive functions. Disabilities Education (IDEA) provides a basis for policies and legislation. The special education (SPED) centers in Cebu, Philippines, are increasing. These are self-contained classrooms and are highly structured learning environments. This study aims to determine the adequacy of assistive technology services.

A SPED school was considered to be efficient if effective assistive technology service deliveries for exceptional learners were attained (Belson et.al, 2003; Nilsson, Gustafson & Svensson, 2018; Chukwuemeka & Samaila, 2020). Malouf (2003) points out that technology has become an essential component of modern life. As cited by Edyburn (2001), the field of SPED technology has grown over the past 20 years, compared to disciplines like reading or psychology. One of the indicators of its maturity is the presence of the different theories, models, and frameworks of technology in special education (Erdem, 2017). Bryant and Bryant (2003) looked at the history of assistive technology in three periods. (a) the Foundation Period which occurred during the 1900s, (b) the Establishment Period which began from 1900 to 1972, and (c) the Empowerment Period which started from 1973 up to the present. Twenty years ago, the US Congress passed the Education for all Handicapped Children Act (P.L. 94-142, now known as the Individuals with Disabilities Education Act (IDEA) requiring a Free and Appropriate Public Education (FAPE) for children with disabilities. One of the related services that schools were mandated to provide students with disabilities was assistive technology (Meyer and Maurer, 2000). Over the past centuries, Computer-Aided Instructions (CAI) has been the most common type of software employed in teaching content

material or basic skills (Woodward & Cuban, 2003). In educational technology literature, the role of computers was to become a "tutor" in the learning process (Lazar, 2015). This instruction helped lessen the teachers' burden to deliver instructions in a more structured way. However, according to Malouf (2001), there was little evidence that the efforts in improving educational outcomes by using technology engendered broad or sustained improvements for a substantial number of students in schools. Indeed, there must be proper scaffolding by teachers, backed up with adequate knowledge, resources and skills in using this instructional device, since the technology was recognized as a means for individuals with disabilities to access the mainstream society (Uslan, 1992). Educational technology is a mode to potentially equalize the capabilities of persons with and without disabilities (Scherer, 1993). CAI is only one type of specialized technology device commonly referred to as assistive technology. "Assistive technology" consists of the tools and strategies that act to liberate the use of technology to all students as well as to provide new ways to promote interactions and learning inside the classroom setting. They acted to "augment abilities and bypass or compensate for a disability" (Lewis, 1993). Assistive technology was referred to as both assistive technology devices and services. Assistive technology also promoted equity of opportunity. The report of the House Committee on Education and Labor, with regards to the Individuals with Disabilities Education Act (P.L. 101-476) stated that "advances in the development and use of assistive technology have provided new opportunities for children with disabilities to participate in educational programs". The provision of assistive technology devices and services redefined an appropriate placement in the least restrictive environment and allowed greater independence and productivity." (Alfar et. al, 2008; cites Neveldine, 2006). Over the past fifteen years, it summarizes the effectiveness of assistive technology services that have taken place. The focus was on the assumption that technology's primary use was more of an electronic tutor and the software was best categorized as CAI. However, most of the research centered on the educational impact of technology-specific to non-disabled peers rather than the students with disabilities (Woodward et al, 2003). Johnson (2001) in his Literature Review on Assistive Technology Services and its Educational Impact on Student Performance and Curriculum Development exposed some deep-seated weaknesses with past research on educational technology services impact. One probable reason is that the research focused on the child's educational performance using the technology in a more immediate impact mindset (Ricci, 2021). Authors made a clear explanation for this inadequacy: "Because students with disabilities could be expected to learn at slower rates, had long histories of academic failure, and needed more intensive instruction than their non-disabled peers, short term interventions hardly could be expected to produce significant changes (Johnson, 2008 citing Okolo et al, 1993). Another weakness seen on the early research was that "much of the research looked at the way in which technology could monitor progress toward IEP (Individualized Education Plan) goals, assess students to determine eligibility, for special education services, or document how technology is used under naturalistic conditions (Johnson, 2001 citing Woodward & Reith, 1997). Three empirical studies were conducted that supported the idea that adequate assistive technology services would help students perform educational tasks as cited by Johnson (2008). These studies were conducted by Fichsten et al. (2001). 800 students shared during the interview that computers aided them in writing, help overcome barriers despite their disability, make work faster, and give them personal growth (Johnson, 2008, citing Fichsten et al., 2001). The second study was conducted on thirty-seven students with disabilities at the post-secondary level. According to the 35 users, computers aided them in accessing information, promoting independence, and compensating for their disabilities. Challenges in the use of

computer technology were pointed out by the second group of students which included the cost, the technology imperfections, such as grammar and spelling checks, and the screens reader's abilities to read all information on the page such as images and graphs (Johnson, 2008, citing Fichsten et al, 2001). The final study was conducted by Fichsten et al. (2001, cited from Johnson, 2008). 725 post-secondary students with disabilities were the main respondents of the study. The majority of them indicated that there are advantages and disadvantages to using assistive technology. Johnson (2008) cited some weaknesses in the research conducted by Fichsten et al. He stated that the study lacked participants as well as quality control with survey distribution and collection since the questionnaires were distributed by multiple people, offices, and organizations. In the local setting, a project implementation study was conducted by Donaldo (2008) on the state-of-the-art devices for SPED at the multimedia center of the Cebu State College of Science and Technology-Main Campus: Assistive Technology. They found out that there were a lot of assistive technology devices which were available in the Philippines. "Here in the Philippines, some of these assistive technology devices are already available in the market. Devices like the desktop computer, talking calculator, cassette recorder, crutches for adults, book chair or book rest, pencil grips, circular lens magnifiers, canes for the blind, and the educational computer soft wares could be purchased in local educational stores and local non-government agencies that catered to special people. (Alfar, et al, 2008). A case study on Assistive Technology Utilized by Teachers in Sped Classes for Students with Cognitive Limitations conducted by Borabo (2006) found out that the problems of using assistive technology devices and services in Cebu Children of Hope included time consumption, tedious project accumulation, too much time in completing programs and difficulty of program modification in including assistive technology devices. However, she also cited the benefits of using assistive technology devices for children with special needs. Using these devices improved the student's comprehension, increased attention and participation, and reduced workload and effort for teachers. Her subject of study, however, was only restricted to one school. Hence, the veracity of the results was only true to one setting. Another seminar report on Computer Assisted Learning Approach for Non-Verbal Autistic Child conducted by Quiros (2008), studying a four-year-old child with autism spectrum disorder, concluded that the computer-assisted device approach was effective in teaching nonverbal children with autism. She suggested during the period of interventions that involving animations will increase the visual-auditory skill of these children. However, these behavior patterns manifested by the child in the study might not be the same behavior shown by other children with autism spectrum disorder given different environmental settings and circumstances (Newcomb & Hagopian, 2018).

Based on wide observation nowadays, assistive technology in the special education context has gained so much familiarity. Some of these devices were prevalently used to increase learning functionality. As observed, the most common assistive technology devices used in the Philippines were the slate and stylus for visually impaired individuals and hearing aid for hearing impaired students, and many more. However, the focus of special education practitioners' centers only on technology, neglecting the important aspects of looking at the effectiveness of its implementation. Malouf (2003) stressed that for the practitioners to explore better ways to use technology for students with disabilities; they must be concerned not only with the effectiveness of its innovation but also with its adaptation and implementation. In other words, the use of assistive technology must provide impactful learning to children with special needs helping them become holistically functional. What matters was not the quantity of the devices but the quality and appropriateness of their use.

This study will be beneficial to the public and private SPED centers in Cebu Philippines. It

will help parents and teachers in terms of the adequacy of assistive technology for students with disabilities. It will be a necessity for special education practitioners, administrators, parents, and other professionals working for children with special needs to assess and be concerned not only about the number of assistive technology devices present but also on the overall implementation of assistive technology services in their respective SPED centers. To identify specific technology concerns or groups of staff members who require training or technical assistance, documentation of their progress and changes over time will provide a valuable basis. This would ensure client satisfaction and a great learning impact for children with special needs. With the greater need to find out the adequateness and appropriateness of these services, this study was truly fit to be conducted.

## II. THEORETICAL-CONCEPTUAL FRAMEWORK OF THE STUDY

Effective assistive technology service delivery must cater to the different components identified in the Individuals with Disabilities Education Act (IDEA), as one of the theoretical legislations in this study (Adebisi, Liman, & Longpoe, 2015). IDEA was enacted originally by the United State Congress in 1975 to ensure that children with special needs received the opportunity for a free appropriate public education, just like other normal children. However, with the growing societal needs and demands in the present, the law has been revised many times. With assistive technology as the main concern, IDEA had several components that play a significant role in ensuring that appropriate services are given to the clientele who were children with special needs. Among the key components identified included: Referral, Evaluation, Extended Assessment, Plan Development, Implementation, and Periodic Review.

In the Referral process, SPED centers must provide training about assistive technology devices, legal mandates, and what assistive technology could do for students with disabilities (Severson, 2020). Also, their special education procedure manual or teacher handbook must include assistive technology services and devices. Their forms and reports must also indicate places to request and describe assistive technology and their center as a whole must promote parent input and inquiry about assistive technology and its use. In the evaluation process, the staff that provided evaluation must be knowledgeable about the operation and application of a variety of assistive technology devices. They must utilize accommodation during evaluations and must know when and where to refer a student for additional evaluation from people with expertise in assistive technology. An adequate extended assessment was seen when special education centers had an effective system to borrow assistive technology for trial use. It was also necessary for the staff to have a clear decision-making process in deciding about assistive technology.

Parents must also be equally valued participants in all aspects of assistive technology decision-making since they know their child better than the primary caregivers at home most especially in the difficult times of Corona Virus Disease 2019 or the COVID-19 pandemic (Patel, 2020). Schools must also consider the students' needs and abilities, the environment, and the tasks, to appropriate cost-effective tools. Their recommendation to the child must also be collaborative and comprehensive in nature. Staff must also be trained in how to effectively write assistive technology into IEPs when needed and their transition plans include specific consideration of assistive technology needs. Lastly, an adequate periodic review would be seen if assistive technology is part of the schools' overall technology plans and that continued staff assessment is also given maximum attention. There was a comprehensive plan developed if the child's curriculum such as IEP included assistive technology devices and services.

 

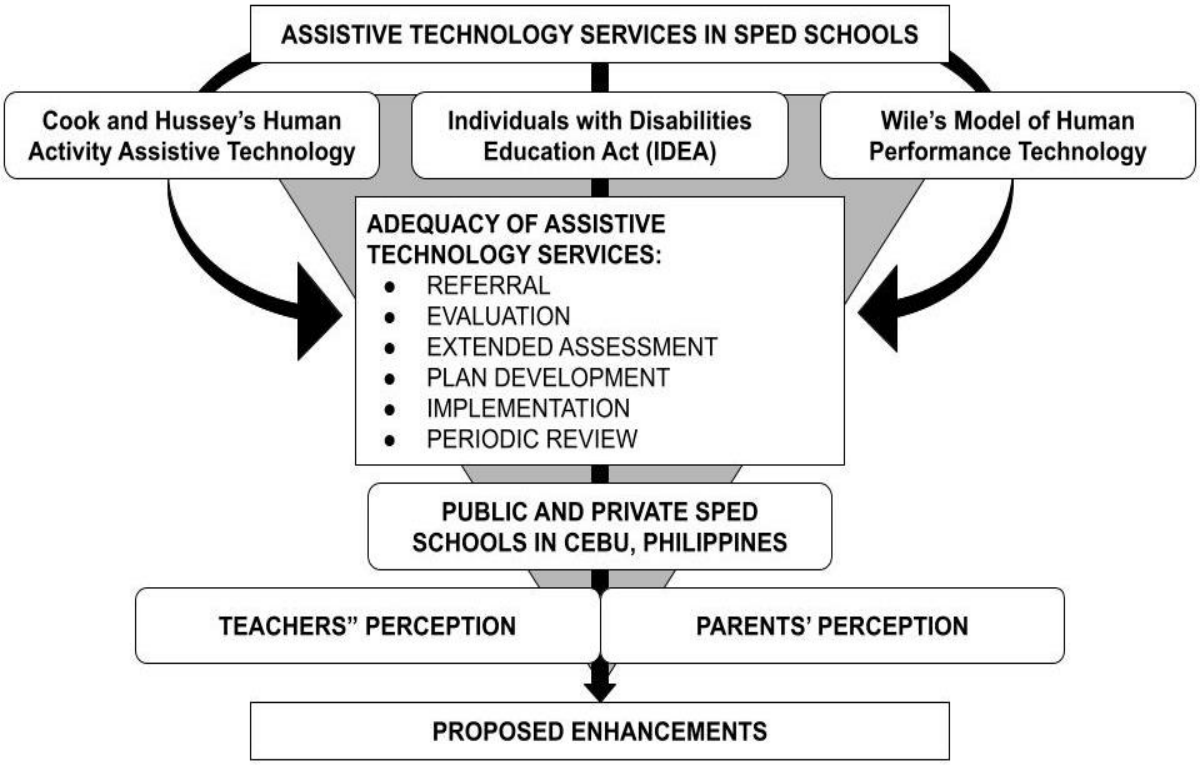


***Figure 1.*** *The Schematic Diagram of Implementing the Theoretical-Conceptual Framework of the Study*

Several specific theories were also identified in this study. These models had become significant to the many reasons why assistive technology as tools were necessary for the performance of children with special needs. These theories including Human Activity Assistive Technology (HAAT) by Cook and Hussey explain that assistive technology services must focus on the individual for improved self-performance. The key components of this model include the human, referring to a child with special needs who controls many intrinsic enablers as well as the abilities and skills; activities; the assistive technology which is concerned with extrinsic enablers and the context (physical, social, cultural, etc.). The interactions of these components must center their attention on the implementation of assistive technology systems and devices. Moreover, this theory insists that the effectiveness of using these different devices must also be taken into account (Edyburn, 2001).

The HAAT was a product of a revision from Bailey's (1989) Human Performance Model developed by human factors engineers and psychologists to assist the design and application of technology. It was typically used to describe the performance of a human in a given task (activity) in a given situation (context – environment). Human Activity Assistive Technology, on the other hand, was developed to analyze the complexities of a person with a disability doing something, somewhere, especially since assistive technology is part of that context. The activities an individual performs were determined by that person's life role. These could be broken down into smaller tasks usually called task analysis process in special education terminology, to help determine points at which an individual might need assistance to accomplish the activity. An individual's level of proficiency must be determined to provide a successful selection of assistive technology devices and services appropriate for his disability category (Atanga et al., 2020). The context, where the activity was performed is identified in different settings such as the physical context (light, temperature, overall classroom atmospheres,

etc), social context (friends, family members, experts, etc), and the cultural context that may affect how assistive technology devices are selected.

The assistive technology as the extrinsic enabler must therefore fit the given activity, human, and context. For the child with a disability to be successful in his endeavors bringing him to a new task level or proficiency, these elements must be present. Cook and Hussey also insisted that it was necessary to measure the performance of the assistive technology system to determine whether or not it is effective (Edyburn, 2001 citing Cook and Hussey, 2001). Wile's Human Performance Technology by David Wile, affirmed that several factors might affect student performance in the assistive technology service delivery. These factors included: (1) organizational systems (2) incentives (3) cognitive support (4) tools (5) physical environment (6) skills/ knowledge and (7) inherent ability. This model helps us understand that technology is not a simple panacea for remediating performance problems.

## III. RESEARCH METHODOLOGY

The researcher utilized the quantitative method in treating statistical data to determine significant relationships of variables that were measured in the study. This method used by the researcher focused on the collection and analysis of numerical data presented in the study. Furthermore, the researcher verified the observations on the various research environment identified, through a triangulation approach, a proposal, and the different assistive technology services that were utilized in 8 Sped Schools among the public and private special education schools as mentioned in the objectives of the study. A standardized questionnaire developed by the Wisconsin Assistive Technology Tool on the School Profile of Assistive Technology Services and the classroom evaluation tool for teacher instruction using assistive technology was the main instrument for the study. The tool was composed of six components of effective delivery services namely: Referral, Evaluation, Extended Assessment, Plan Development, Implementation, and Periodic Review. Another tool was made for parents regarding their perception of the adequacy level of assistive technology services in their chosen special education school. The tool used was translated into Cebuano to ensure that common understanding can be attained by the parent-respondent. Both of these had categories from Poor Category to High Category for teacher respondents and ng Makatabang (Very Helpful) and Dili Makatabang (Not Helpful) in Visayan Dialect for parent respondents.

An observation tool was also made for teachers during their teaching demonstration to determine the level of implementation of integrating assistive technology devices and services into the classroom instruction. There were 28 teacher respondents in this study and 34 parent respondents. The triangulation method was used in the conduct of the study. Surveys, interviews, and classroom observations were utilized to gather and verify data. A transmittal letter was given to the principals and head schools to allow the researcher to administer the questionnaire to their Special Education teachers. Moreover, enclosed in the letter was a request to parents to answer the Cebuano version of the tool. To determine the teachers' and parents' perception of the adequacy level of assistive technology services, the researcher found the sum of the weighted score of each component. The weighted mean, frequency, and the sum were used as the formula. The Person Correlation was utilized to determine the significant relationships between the mentored disability categories, teaching qualifications, and teaching experience to the teachers' adequacy in integrating assistive technology services in special education schools. The T-Test of Independent or Uncorrelated Means was used in this study as well to determine the significant differences between parents' and teachers' perceptions on the adequacy of assistive technology services in SpEd schools and the adequacy level of assistive technology services between public and private high schools.

## IV. RESULTS AND DISCUSSION

This chapter presents analyzes and interprets the data collected in this investigation. The data pertained to the profile of the teacher respondents based on their disability category mentored, qualifications, and teaching experience; parents' profile in terms of age and sex; the significant relationship of the different components identified to the teachers' competency in integrating assistive technology services in Sped Schools; the adequacy level of assistive technology services in Sped schools; and the significant difference on the adequacy of assistive technology services between public and private schools in Cebu City.

### *Respondents' Profile and Background*

The data also showed that the Cebu City teachers adhere to the vision of Special Education in the Philippines stating that children with special needs should be adequately provided with basic education making them realize their full potential and that he/ she will get full community support without discrimination of any kind (Inciong et.al, 2001).

***Table 1.*** *Distribution of the Respondents from Public and Private SPED Centers in Cebu, Philippines*

| **Public Schools** | **No. of Teachers** | **No. of Parents** | **Total** | **Percentage** |
|---|---|---|---|---|
| First High School for Hearing Impaired | 5 | 5 | 10 | 16.12% |
| Lipata Central School – SPED Center | 5 | 4 | 9 | 14.52% |
| Cebu Sikatuna Lions – Special Education Center | 2 | 5 | 7 | 11.29% |
| Zapatera Elementary School – SPED Center | 5 | 5 | 10 | 16.12% |
| **Private Schools** | **No. of Teachers** | **No. of Parents** | **Total** | **Percentage** |
| Oaminal Learning Center | 3 | 4 | 7 | 11.29% |
| St. Ezekiel Special Learning Center | 3 | 3 | 6 | 9.68% |
| REACH Center | 2 | 4 | 6 | 9.68% |
| Sunshine SPED Center | 3 | 4 | 7 | 11.29% |
| **Total** | **28** | **34** | **62** | **100%** |

35% of the respondents were handling children with Autism while 27.5% of them are managing children with hearing impairment. 20% of the teachers are handling children who are mentally challenged, 12. 5% are handling Down Syndrome, and 5 % of the respondents take care of children with cerebral palsy. This implied that there were more children with autism that were diagnosed in most schools in Cebu and are mostly enrolled in Special education centers, compared to other disability categories. 55.56% of the respondents are Master's Graduate in Special Education, while 29. 63% of them took up Special Education in their undergraduate degrees. Other respondents obtained the following degrees: BS Home Economics with MA and EDD units with 7. 41%, BS Industrial Arts with 3.7% sharing with BS Nursing, also with 3.7%. 57.14% of the respondents had teaching experience ranging from 1- to 5 years while 21.43% of them had an average year of teaching ranging from 6- to 10 years. It also shows that 7. 14% of respondents have 11- 15 years of teaching experience while 14.29% of them had an average of 16- 20 years of experience. Rosenberg et al (2006) mentioned that field experiences were among the most important components in the professional development of quality teachers. 31.43% of the parents belonged to the age bracket of 36- 40 while only 2.86% of the respondents belonged to the age between 56- 60. 25.71% of the respondents belong to the age bracket of 31- 35, while 11.43% were shared with three age

brackets: 25-30, 41-45, and 46- 50. Only 5.71% of the respondents belong to the age bracket of 51- 55. Lastly, 85.71% comprised females while only 14.29% were males.

### *TEACHERS' PERCEPTION ON THE ADEQUACY LEVEL OF ASSISTIVE TECHNOLOGY SERVICES OF SELECTED PUBLIC AND PRIVATE SPED CENTERS IN CEBU*

Table 2 presented the teachers' perception of the adequacy level of assistive technology services of selected Public and Private Sped Centers in Cebu as assessed by the Sped teachers. Based on the average mean presented, the evaluation component was considered adequate in Special Education schools in Cebu while the Referral, Extended Assessment, Plan Development, Implementation, and Periodic Review are adequate as perceived by the teachers. The overall result further revealed that the assistive technology services given in Special education schools were satisfactory, which meant that assistive technologies in special education schools were present however; some assistive technology services given to children with special needs lacked sufficiency and were not fully maximized. In the Referral component, the result showed that the training given to teachers in the use of AT devices was satisfied with a weighted mean of ***3.32***. This meant that some and not all special and regular education staff members were aware of assistive technology and had received in-service training. This also implied that the schools lack quality experts that would provide such assistive technology service training as well as the available funding for the trainees.

***Table 2.*** *The Adequacy Level of Assistive Technology Services of Selected Public and Private Sped Centers in Cebu as Assessed by the SPED Teacher Respondents*

| ITEMS | WEIGHTED MEAN | INTERPRETATION |
|---|---|---|
| **Referral** | 3.2 | Somewhat Satisfactory |
| **Evaluation** | 3.6 | Satisfactory |
| **Extended Assessment** | 3.36 | Somewhat Satisfactory |
| **Plan Development** | 3.3 | Somewhat Satisfactory |
| **Implementation** | 3.27 | Somewhat Satisfactory |
| **Periodic Review** | 3.27 | Somewhat Satisfactory |
| **OVER ALL TOTAL** | **3.32** | **Somewhat Satisfactory** |

One of the important training considerations according to Bryant and Bryant (2003) was the giving of quality tutorials to SPED teachers in the acquisition and use of the AT devices. According to Parette et. al (1996) quoted from Bryant, Bryant (2003), AT Service training was relevant to ensure that AT adaptations were used and maintained. The production of school forms and manuals in Special Education centers must also be taken into account to provide awareness and responsiveness for the entire school community since the result showed that the teacher forms and handbooks produced were only somewhat adequate with a weighted average of 3.28. There was not much adequacy as well in terms of valuing parental input. Parents must be informed and be provided with adequate awareness of the AT devices that would be used so that they become equal partners in the successes of their own children. Under the evaluation component, the weighted mean average was 3.6, a satisfactory level. This meant that the teacher's knowledge of evaluating the application and operation of various AT devices and their ability to use accommodation was adequate. This was a commendable result because evaluating the use of AT Devices in terms of looking for the child's success is necessary. As cited by (http://www.rehabtool.com/forum/discussions/88.html), a good assessment matched a person with a disability to the best assistive technology and usually requires more than one evaluation

In the Extended Assessment, the result reveals that the weighted mean was 3.36 with a somewhat satisfactory level. This implied that

the system for AT trial use, the parent participation in the decision-making process, and the utilization of transdisciplinary assessment were adequate. The lack of knowledge among the school staff looking for assistive technology devices hampered the selection of appropriate assessment tools for children with special needs. Hence, teachers and other school personnel should be committed to making several considerations in the selection of AT devices.

On the other hand, the ability of the school staff to provide clear decision making and in matching student's needs, abilities, environment, and tasks to appropriate, cost-effective tools were adequate with a weighted mean of 3.55 interpreted as satisfactory. This meant that team members were trained and sometimes used an organized process. This result supported the practices of Ann Arbor School that their decision-making team clearly provided data set of standards on who to involve when deciding effective technology tools for their client. This practice was also in support of Bryant and Bryant's (2003) idea that students' needs and interests must be met and must be aligned according to the environmental structure, attitude, and acceptance of several decision makers.

In the Plan Development component, the general weighted average was 3.36 with a somewhat satisfactory level, which meant that the teacher's IEP usually included assistive technology but not everybody had received trainings in writing assistive technology into IEP. This gave an indication that special education schools in Cebu had initiatives in joining local workshops and conferences regarding effective IEP writing. Woodward & Reith (1997) emphasized that the integration of technology into the Individualized Education Plan in special education schools became more widespread. The result reveals however, that in the actual writing of the IEP, where designing and writing integrated showed that its planning was only somewhat adequate which meant that the technology integration was not profoundly manifested.

As reflected in the Implementation component with a weighted mean of 3.27 with a somewhat satisfactory level, most of the Sped Schools in Cebu City had budgets for the purchase of the assistive technology. However, clear responsibility for training, equipment, maintenance, and operation assigned to specific AT service providers, identification of consultants in district or other source in using AT and parents and service provider monitoring were not implemented. Edyburns' (2001) model of technology integration process showed that teacher training must be highlighted and must work through a thorough process.

Finally, the result revealed under Periodic review with a weighted mean of 3.27 with a somewhat satisfactory level entailed that teachers and other school personnel found the technology integration plan and continuing assessment somewhat adequate. This result implied that assistive technology was not really the topmost priority of the Special education centers in Cebu. It ran congruent with the result in the Implementation stage wherein most of the Sped Schools in Cebu City had no budget allocation for training, equipment, maintenance, and operation assigned to specific AT service providers, identification of consultants in the district, or other sources in using assistive technology. It was therefore recommended that technology plans must be prioritized and must be included in the Vision and Mission of the school as stated in the P21 Framework, people in the 21st century must live in a technology and media-suffused environment.

### *PARENTS' PERCEPTION ON THE ADEQUACY LEVEL OF ASSISTIVE TECHNOLOGY SERVICES OF SELECTED PUBLIC AND PRIVATE SPED CENTERS IN CEBU*

Table 3 presents the parents' perception on the adequacy level of assistive technology devices in Special education schools in Cebu. Based on the weighted mean, all the identified components are interpreted as somewhat satisfactory (*Medyo Makatabang)* with a weighted mean of 2.90. The result implied that

the assistive technology services given to parents are not at all satisfying to them despite the presence of these services in special education centers. Under the Referral component with a weighted mean of 2.78 described as "Medyo Makatabang" (*somewhat satisfactory*) parents' training on the current awareness about assistive technology needs improvement having a rating of 2.33. This implied that Special Education centers in Cebu were not giving adequate training to family members who were the most important members of the decision-making process. Richards (1995) quoted Bryant & Bryant (2001) discussed that decision-makers must consider the family experience and comfort level with technology including the necessary help that families need in integrating technology in their respective homes.

***Table 3.*** *The Adequacy Level of Assistive Technology Services of Selected Public and Private Sped Centers in Cebu as Assessed by the Parent Respondents*

| ITEMS | WEIGHTED MEAN | INTERPRETATION |
|---|---|---|
| **Referral** | 2.78 | Somewhat Helpful |
| **Evaluation** | 2.69 | Somewhat Helpful |
| **Extended Assessment** | 2.75 | Somewhat Helpful |
| **Plan Development** | 3.08 | Somewhat Helpful |
| **Implementation** | 2.90 | Somewhat Helpful |
| **Periodic Review** | 3.21 | Somewhat Helpful |
| **OVER ALL TOTAL** | **2.9** | **Somewhat Satisfactory** |

It was therefore recommended that Special education schools must provide trainings on assistive technology to parents and give them meaningful ideas on how could they contribute to the selection of appropriate devices for their child's welfare. In connection to the parents' contribution to the selection of appropriate AT devices, the result revealed that it basically somewhat helpful with a weighted mean of 2.75 under Extended Assessment component. This implied that parents were not consulted on what assistive technology devices were used for their children. According to Belson (2003) technology planning, like all school initiatives, benefited from a high level of structure and the input and support of the school community. Parents, as part of the school community, must therefore not be neglected in the planning and consultation. As revealed under Implementation component with a mean of 3.48 described as "Makatabang" or Satisfactory. Parents found the teacher relationship adequate and therefore implied that there was a healthy environment among special education teachers in Cebu. The parent's perception on the implementation of the assistive technology with an average mean of 2.90 was somewhat helpful in assisting their children in learning in the 21st century and it was somewhat helpful to have a periodic review and have a constant training and evaluation for the learners with special ability to be well-developed in using the assistive technology.

### *SIGNIFICANT DIFFERENCE BETWEEN TEACHERS AND PARENTS' PERCEPTION ON THE ADEQUACY OF SPECIAL EDUCATION CENTERS IN CEBU*

Table 4 presents the significant difference between the teacher and parent's perception on the adequacy of assistive technology services in SPED schools. The result reveals that there was no significant difference with the group's perception on the five AT services components namely: Referral, Evaluation, Plan Development, Implementation and Periodic

Review. However, there was a significant discrepancy in their perception in Extended Assessment. Part of the extended assessment component is the involvement of parents in the decision-making process in the selection of assistive technology devices for children with special needs.

***Table 4.*** *A Summary of the Significant Difference between the Teachers and Parents' Perception on the Adequacy Level of Assistive Technology Services in Cebu Special Education Centers*

| | | R | Computed t | Critical t | Decision | Interpretation |
|---|---|---|---|---|---|---|
| **Teachers' Qualifications** | | -0.004 | -0.018 | 2.080 | Accept Null Hypothesis | No Significant Relationship |
| | | 0.07 | 0.322 | 2.080 | Accept Null Hypothesis | No Significant Relationship |
| | | -0.15 | -0.695 | 2.080 | Accept Null Hypothesis | No Significant Relationship |
| | | -0.05 | -0.229 | 2.080 | Accept Null Hypothesis | No Significant Relationship |
| | | 0.07 | 0.322 | 2.080 | Accept Null Hypothesis | No Significant Relationship |

The result implied that teachers neglected the role of parents in considering their ideas and suggestions on the selection of the various assistive technology devices for their children. The teacher's input, as well as that from the parents, peers and other professionals demonstrated a level of involvement in the assessment process that would more likely lead to device use after the technology is determined (Bryant and Bryant, 2003).

***SIGNIFICANT RELATIONSHIP BETWEEN TEACHERS' QUALIFICATIONS AND TEACHER'S ADEQUACY IN INTEGRATING ASSISTIVE TECHNOLOGY***

Table 5 presents the relationship of the teachers' qualifications to the adequacy level of assistive technology services in Sped Schools. The result revealed that the teachers' qualification had no significant bearing to the teachers' competency in integrating assistive technology services in Special Education schools. As indicated below, the null hypothesis was accepted.

***Table 5.*** *Significant Relationship between the teachers' adequacy in integrating Assistive Technology Services in SPED Schools and the Teachers' Qualifications*

| | | R | Computed t | Critical t | Decision | Interpretation |
|---|---|---|---|---|---|---|
| **Teachers' Qualifications** | | -0.004 | -0.018 | 2.080 | Accept Null Hypothesis | No Significant Relationship |
| | | 0.07 | 0.322 | 2.080 | Accept Null Hypothesis | No Significant Relationship |
| | | -0.15 | -0.695 | 2.080 | Accept Null Hypothesis | No Significant Relationship |
| | | -0.05 | -0.229 | 2.080 | Accept Null Hypothesis | No Significant Relationship |
| | | 0.07 | 0.322 | 2.080 | Accept Null Hypothesis | No Significant Relationship |

 

This implied that the teachers' qualifications did not necessarily provide the satisfaction of clients in terms of assistive technology services that are provided in special education centers. The degree that someone might get does not define the quality of teaching as part of the AT Services, that he or she demonstrates. Ingersoll (2007) pointed out in his comparative study of teacher preparation and qualifications in six nations, that the problem of low-quality teaching could be traced to inadequate and insufficient pre-employment training of prospective teachers. Indeed, teacher qualification would provide adequateness of AT services if it is backed up with necessary teaching values expected for a special educator to have.

***SIGNIFICANT RELATIONSHIP BETWEEN TEACHERS' ADEQUACY AND TEACHER'S EXPERIENCES IN INTEGRATING ASSISTIVE TECHNOLOGY***

Table 6 presented the relationship of the teaching experience to the adequacy level of assistive technology services in Sped Schools. The result revealed that the teachers' experience in other fields had no significant bearing to the AT services of Special Education schools.

***Table 6.*** *Significant Relationship between the teachers' adequacy in integrating Assistive Technology Services in SPED Schools and the Teaching Experience*

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Teaching Experience** | **1-5 years** | **21** | **0.03** | **0.138** | **2.080** | **Accept Null Hypothesis** | **No Significant Relationship** |
| | 6-10 years | 21 | 0.01 | 0.046 | 2.080 | Accept Null Hypothesis | No Significant Relationship |
| | 11-15 years | 21 | -0.10 | -0.461 | 2.080 | Accept Null Hypothesis | No Significant Relationship |
| | 16-20 years | 21 | -0.08 | -0.368 | 2.080 | Accept Null Hypothesis | No Significant Relationship |

This implied that the *teaching experience in other fields did not equate with the satisfactoriness and sufficiency of assistive technology services in SPED schools.* For instance, the respondents' teaching experience in grade school, high school or in any setting might only have fewer benefits to children with special needs. According to Smith (2004), Special education was supposed to be individualized providing a tailor- made education for each child with special needs. It is tailored, in the sense that every disability category has varying needs that should be addressed differently across environmental settings. It was also a plus factor if the teacher handling special needs children will have extensive special education field experience. The necessary related experience must be highlighted in the field of special education such as exposure to general education set- up and the like might still be of great help, but would not gradually determine the extensiveness and dynamism of the practitioner when immersed in the actual special education set-up.

## V. CONCLUSION

First, it shows no significant difference between teachers' and parents' perceptions of the adequacy of SPED centers in Cebu. Second, it shows no significant relationship between the teachers' adequacy in integrating assistive technology services in SPED schools and the teachers' qualifications. And lastly, it shows no significant relationship between teachers' adequacy and teachers' experiences in integrating assistive technology. The assistive technology services given to special education centers in both public and private schools were

somewhat adequate based on the six key components identified namely: Referral, Evaluation, Extended Assessment, Plan Development, Implementation, and Periodic Review with an interpretation of somewhat satisfactory. The inadequacy of the knowledge gained by the special education personnel and staff in Cebu in identifying and using assistive technology resources was consistent with the services they provided to the clientele. However, the service is present but not fully maximized in meeting the demands of children with special needs.

## RECOMMENDATIONS

This study recommends exposure and provision of training to address the different components and their subcomponents. The educational training should prioritize the parents, teachers, administrators, and other persons concerned. It also recommends that the Department of Education include the key provisions of training special education teachers using assistive technology among parents with special needs. Lastly, the schools catering to special needs must have an Individualized Education Plan (IEP).

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