

## Learners with Disabilities Can Contribute to Waste Management

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### Abstract:

A group of learners with disabilities were trained by a team of special education teachers and occupational therapist in converting used papers to paper bags which can be used by private establishments as an alternative to plastic bags. In the process, Twenty-five business establishments participated in the needs assessment and evaluation of the product. After 30 training sessions, all of the five participants showed improvement in quality of output; three were totally independent in producing fair quality paper bags. Therapeutic benefits were also seen as certain visual motor skills improved in the process e.g. visual figure ground, visual closure, visual discrimination and visual sequential memory. For the acceptance of the product, 75% of the establishments expressed willingness to buy the paper bag though mostly did to help persons with disability (PWD). Only 3% were doing it to help the environment and the remaining 22% still needs to be convinced of the quality and price of the product. Although the study aimed for empowerment and creating opportunities, such charitable attitude can pave way to gain the community's' attention, interest and intent to use the product. The possibility of helping and empowering persons with disabilities while dealing with environmental concerns can be sensed from the findings. Further improvement in skills and output can be attained given longer training sessions. Areas with high consumption of plastic bags can try the program and increase success by providing bigger budget to lengthen training program, including more participants and supporting it with local ordinances to ensure the participation of the community.

**Key Words:** disability; waste management, livelihood

### 1. INTRODUCTION

Tons of garbage are produced daily and there are no signs of remarkable reduction despite calls for better management. The Philippines generated 13.1 million tons of waste or 35 tons of waste a day in 1999 (National Solid Waste Management Commission, 2011). Fifty percent of which are recyclable paper and plastic. Waste paper alone contributes to 19% of solid waste produced at the municipal level but only 60% of the 100 tons of waste paper being

produced every year is being recycled (Parayno & Busmente, n.d.). There are initiatives taken to deal with the problem, i.e. The Ecological Solid Waste Management Act of 2000 came up with Municipal Recovery Facilities (MRFs) and prompted the local government and the community to participate through varying ways of waste management. The challenge however is that only about 21% or 8,843 barangays had existing MRFs at the very least. Add to this is the high cost of running and maintaining a local MRF (Castillo & Otoma, 2013). One way to

support this move is to mobilize various community sectors such as persons with disabilities.

The World Health Organization (2019) estimates that ten million or ten percent (10%) of the total population has a form of physical, sensory, or mental impairment. Despite the effort of the government and private entities, still employment opportunities are limited. Of the 100,000 registered employable PWDs, only less than 10% are employed, some have small-scale income-generating activities while others are usually under informal arrangements. The remaining 25% depends on the financial support from family members/ friends, benefits from the government, or even from begging (Schelzig, 2005). The difficulty in getting and maintaining competitive employment is partly due to school failure and social rejection. Even if they land a job, some of them are even trapped in low paying employment (Levine, Marder, & Wagner, 2004).

A way to deal unemployment of PWD and waste management problems at the same time is by providing customized employment where the employment relationship between employees and employers and the determination of the strengths, needs, and interests of the person with disability are individualized and considered (Office of Disability Employment Policy, 2001). In such setting, PWD can work without their conditions serving as a hindrance nor them experiencing discrimination. Putting it into action, the general idea is to train PWD in converting clean used paper into small “supot” or paper bags which business establishments can as an alternative to plastic bags. The community can participate by donating used papers and other materials e.g. adhesives to lessen the cost of production. They can also patronize establishments who uses paper bags for their products. Although by nature, it’s quite challenging to involve the community in waste management even if it is directly affecting them. The convenience, availability and the affordability of both plastic bags can further make it more challenging to achieve the goal.

But according to theory of planned behavior, a behavior can be influence by targeting the three components of one’s intent namely attitude towards the behavior, subjective norm, and perceived behavioral control (Ajzen, 1991; Bautista, 2019). Since people generally have positive attitudes towards PWD (Gatchalian et al., 2014), it can be used as a starting point to ask people to try the product. Once they do, the next thing to hope for is for them to have a positive experience in using the product.

## 2. METHODOLOGY

The study followed a multiphase design in collecting qualitative and quantitative data to identify the needs of the community, the training needs of the PWD and evaluating performance and the quality of the outputs. The training was hosted by a private education institution that offers therapy services and inclusive education in Lemery Batangas. The 30-session was divided into two: training period and production period. Afterwards, the sample paper bags were distributed to participating establishments for them to try and to evaluate.

Initially, 10 of the special education students participated in the study. However, only five were able to complete the entire session. Four were individuals with intellectual disability and one was with autism. Four of the participants came from a public school in the area while the other one came from the host institution. The participants must have the basic fine motor and gross motor skills necessary to fold paper and apply adhesive, basic language skills to follow two steps instruction and communicate needs. They should not be allergic to dust and adhesives. The head of the special education department took over the implementation of the training program. She was assisted by three special education teachers. An occupational therapist was tapped to evaluate and interpret the progress of the participants using standardize test.

A researcher made a needs assessment

was used to determine the packaging requirements of business establishments. As for the pre-test and posttest performances, two standardized tests were used. The first is the Test for Visual Perceptual Skills – 3 (TVPS-3), which measures visual discrimination skills, visual memory, spatial relations, form constancy, visual sequential memory, visual figure ground and visual closure by analyzing how an individual copies several sets of figures (Brown & Peres, 2018). The second instrument is the Beery-Buktenica Developmental Test of Visual-Motor Integration (VMI). The VMI-VI designed to assess the extent to which individuals can use their visual and motor abilities (eye hand coordination) to copy geometric figures (Spencer & Kruse, 2013). A paper bag making observation tool was created by the researchers to measure performance in following instructions, folding paper, applying adhesive, focusing, persevering and working harmoniously with others. The second part looked at the quality of the paper being produced. The items were rated from poor to very good. It also determined the level of assistance provided to the students by the teachers (e.g. maximal to independent physical assistance). The business establishments were given a survey to evaluate the paper bag in terms of its durability, ease of use, affordability and overall impression by rating each aspect from strongly disagree to strongly agree.

Descriptive statistics were used to present the raw data in an organized form. This included frequency, percentage and mean scores. Paired t-test was used in comparing pre and post-test. Visual analysis of data was used to further analyze group and individual performances plotted through a line graph. This included comparing pre and posttest scores per student, per skill and for looking for the trend on the performances from the first to the last day of the training period.

### 3. RESULTS AND DISCUSSION

The needs assessment shows that 64% of the establishments sell basic commodities like

food, convenience store items, apparel and accessories, and pharmaceutical products. Twenty four percent sells school and office supplies, and cellular telephone supplies. The rest were into vehicle parts, gift items, and general merchandise. Majority sells merchandise in small quantities and could make use of small paper bags as packaging. Seventy four percent said they are willing to use the paper bags but only 15% of them will do so for environmental reasons while majority are into helping the PWD. Twenty two percent were still undecided depending on the price and quality of the paper bags while the remaining 4% didn't stated any reason for not trying the product.

Table 1 Pre and post test scores on TVPS

	VD		VM		SR		FC		VSM		VFG		VC	
	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	R	R	R	R	R	R	R	R	R	R	R	R	R	R
	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	S	S	S	S	S	S	S	S	S	S	S	S	S	S
	T	T	T	T	T	T	T	T	T	T	T	T	T	T
S1	48	61	70	63	51	48	57	47	72	48	51	80	62	96
S2	72	48	57	63	51	72	77	57	65	90	102	157	48	51
S3	48	48	51	89	81	57	77	118	57	65	80	80	48	137
S5	48	72	70	57	74	62	166	88	65	118	61	61	48	62
S6	48	48	70	67	48	48	66	57	52	65	51	90	51	157

LEGEND  
 Pink - subskills with increase scores from pretest  
 Green - subskills with no change from pre-test to post test scores  
 Blue - subskills with decrease scores from pretest

Paired t-test findings shows that as a group, there were no statistically significant changes in the pre and posttest scores. But a detailed and individual review of data (Table 1) shows that all students had increased scores in Visual Closure (VC), 4 of 5 in Visual sequential memory (VSM) and 3 of 5 on Visual Figure Ground (VFG). Visual perceptual skills are necessary for one to function properly across settings. If underdeveloped, it may cause challenges like difficulty in reading traffic signs that are partly covered by other things like branches. Poor VFG may result to difficulties in organizing things and might cause one to overlook and miss out important information. VSM on the other hand covers one's ability to store and retrieve visual information and may influence one's ability to recall information (Shneck, 2010a). Thus improvements in those

areas may potentially contribute not only to one's ability to perform a task and maintain an occupation but function well on a daily basis.

Table 2 Pre and post test scores on Visual Motor Integration

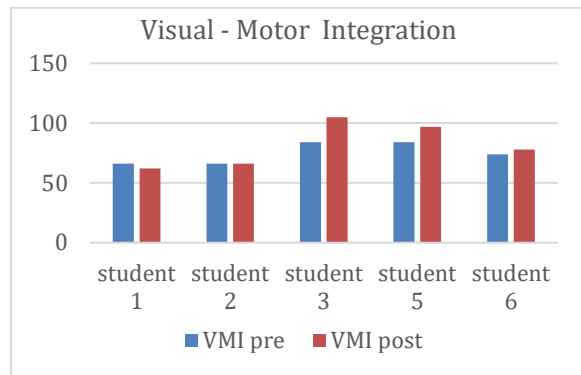


Table 2 shows the result of the VMI test. Three out of five participants showed increase scores in their VMI post-test. Visual motor integration is the coordination of visual perception and body movements necessary for important activities like hand movements (Dibek, 2021). Just like visual perceptual skills, VMI can impact an individual's functioning across settings from activities of daily living, to academic related activities to occupation based tasks.

Table 3 Paper bag making performance

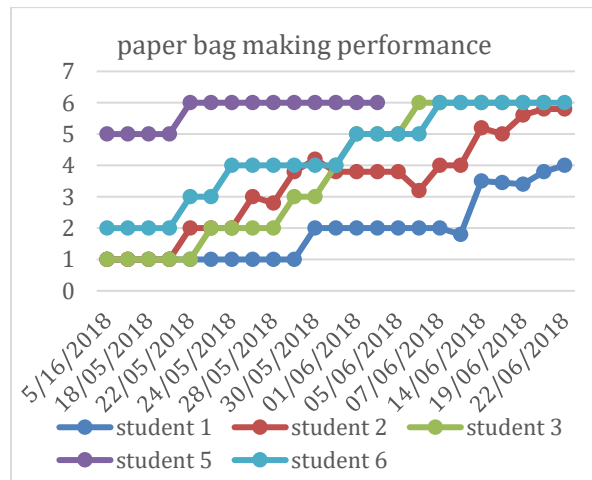


Table 3 presents the daily performance of the students as evaluated by the teachers. Each dot on the line represents one session. As it can be seen, most of the students started showing progress after four sessions. Performance was evaluated in terms of ability to follow instruction, fold the paper properly and apply adhesive and the quality of the paper being produced. The steps were made short and simple, and one teacher to one student ratio if possible was ensured so that the needed instruction and support can be provided. It can be seen that at as early as the third week of session, students were already performing well and producing paper bags of acceptable quality.

Table 4 Level of assistance

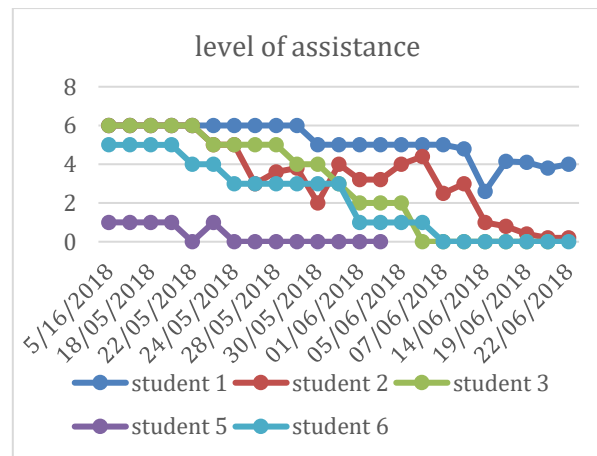


Table 4 shows the level of assistance provided by the teachers to each of the student. This is provided to ensure errorless learning, increase motivation and to ensure success. It varies from verbal instructions, gestures and hand over hand physical assistance to mention a few. This depends on the needs of the student and the difficulty of the task at hand. Prompts are faded or decreased as time goes by to ensure that the individual is learning the skill and eventually capable of doing the task independently. Most of the participants were given full or consistent assistance in the first few sessions. The assistance were slowly decreased and faded after four to six sessions. The reason

for the relatively slow fading of assistance is due to the nature of the task involved. Creating paper bags out of scratch requires a certain level of precision in folding the paper. It also requires caution so that the right amount of adhesive is applied. By the last phase of the session, three of the five students were already working independently with minimal supervision. This shows that the one on one instruction and the fading of prompts were helpful in training the students on how to make the product.

*Table 5 Evaluation of the final product*

	Rating	Int
1. Durability of the product	3.25	Neither agree or disagree
2. Ease of use	3.16	Neither agree or disagree
3. Affordability of the product	2.97	Neither agree or disagree
4. Impression of the product	3.58	agree

After the training session, the final outputs which passed the inspection of the teachers were delivered to the participating business establishments. They were given at least two weeks to try the product. A survey was conducted to check on the participants experience and evaluation of the product. Generally, the participants are unsure of the durability, the ease of use and the affordability of the product. Although they stated that the paper bag did not break or tear when items were placed and were taken out, they are not sure if the paper bag can be used again or if it will be able to hold the items for long. They were also not sure if they can afford the price of the paper bag since it was initially priced at fifty cents per piece. Despite this, they seem to show a positive attitude towards the product saying that given improvements on durability and affordability, has the potential to be of use.

#### 4. CONCLUSIONS

Majority of the students showed improvements in quality of output. Some were almost independent while some requiring lesser assistance. Therapeutic benefits were also noted as certain visual perceptual and visual motor skills improved in the process. Three out of five participants showed increase scores in their Visual Motor Index. Four out of the five students all showed improvements in their Visual Figure Ground and Visual Closure skills, and three of the six participants improved their visual discrimination and visual sequential memory.

Although majority of the business establishments are not yet sure of the durability and the affordability of the product, many are willing buy and use the paper bags mainly to support the employment of PWD. This agrees with what Gatchalian et al., (2014) said that employee tend to have positive attitude towards PWD. And following the idea of the theory planned behavior in influencing peoples intention to perform the behavior (Ajzen, 1991; Bautista, 2019), such positive attitude can be used to encourage the business establishments to atleast try the product and hopefully to appreciate its utility. With continuous training, it is possible that PWDs can be capable of attaining quality outputs that would satisfy the intended costumers while the same time improving developmental skills and possible life functioning and outcomes. Future researchers can also Improving the process of making the paper bags so that the quality of the output can be enhanced.

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