



## ROLE OF OCCUPATIONAL THERAPY IN IMPROVING THE VOCATIONAL PROFILES OF YOUTH WITH INTELLECTUAL DISABILITIES AT A VOCATIONAL CENTRE - AN ACTION RESEARCH

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### ABSTRACT

**Title:** Role of Occupational Therapy in improving the vocational profiles of youth with Intellectual Disabilities at a vocational centre—An action research **Aim of Study:** To study and understand the role of Occupational Therapy(OT) in improving the vocational profiles(VP) of youth with intellectual disabilities(ID) a vocational centre. **Methods:** Study design was action research. The vocation of chocolate making was considered for the study. 1) Input Phase: 18 youth with ID, of 18-24 years age, working as trainees, at a vocational centre, were selected using convenient sampling. The existing assessment in their Individual Vocational Program(IVP) was replaced with Occupational Therapy(OT) assessment of vocational profiles using, task analysis, Goal Attainment Scaling(GAS) and Model of Human Occupation Screening Test (MOHOST) 2) Transformation Phase: A video based Occupational Therapy intervention program(VBOTIP) using video prompting and video modelling, was added to existing IVP replacing the existing picture cue cards 3) Output Phase: Re-assessment at 12th week and 24th week was done using task analysis and above mentioned scales. **Conclusion:** OT played a unique and important role in improving the vocational profiles of youth with ID at a VC. The action research methodology helped in bringing about sustainable change in the vocational profiles.

**KEYWORDS :** Action Research, Intellectual Disabilities, Occupational Therapy, Vocational Profiles, Youth

### INTRODUCTION

Vocational centres (VC) work with trainees having varied disabilities, including youth with intellectual disabilities(ID), through their staff i.e. vocational trainers/special educators. It is a common observation that only a few of these centres have an Occupational Therapist employed with them. The primary author of this study got an opportunity to work at one such VC as a consultant occupational therapist, and her work involved being a vocational coordinator. The problem at the centre was that the staff had difficulty managing the trainees (youth with ID), who though had learned the vocational skill of chocolate making, couldn't complete the vocation and also required excessive verbal & physical prompting, leading to their grades on the individual vocational programs (IVP) not improving. The staff also felt that their trainees were at risk of having poor vocational profiles due to this. Vocational profiles (VP) are repositories of information collected, that indicate the individuals' workplace capabilities, limitations and interests.<sup>1</sup> The objectives of the VPs is to know what additional training and supports may be required by the profiled individuals to establish realistic aims for career development.<sup>2</sup> We know through our Occupational Therapy (OT) theory & clinical knowledge base about its domains of practice i.e. OT assessments and interventions can play a unique and important role, in improving VPs but empirical research is lacking. So the primary author of this study had the rationale of conducting an action research (a methodology of research that seeks transformative change through simultaneous process of taking action and doing research, which are linked by critical reflection) to understand this role.

### AIM OF THE STUDY

To study and understand the unique role of OT in improving the VPs of youth with ID at a VC

### Objectives

- To understand the role of OT assessment and intervention in bringing about a change in the existing IVP
- To understand how the change in the existing IVP can improve the VPs

### METHODS

**Study Design**—An Action Research has the following characteristics different from fundamental research<sup>3</sup> a) The purpose is generally change/improvement in the current practices b) The investigator may be associated with the problem, which is generally a local, practical problem. c) The design can be flexible, and it can be changed during the course if required d) Sampling is non-purposive convenient sampling from an organization/setting e) For data collection and analysis – descriptive statistics is used f) The conclusions may be in the form of remedial measures for improving the specific current practices

**Ethical Consideration**—The study was conducted as per the

Declaration of Helsinki. The parents of the participants and the vocational centre staff signed informed consent forms.

**Study Participants**— Using convenient sampling, 18 Individuals with mild and moderate intellectual disability, working as trainees at a vocational centre, age range –18-24 years, both males and females, having homogenous behavioral status and adult community living skills as per Behaviour Assessment Scale of Adult Living – Mental Retardation (BASAL-MR)<sup>4</sup> were selected.

**Study Procedure- Input Phase/Assessment (Baseline Week 1)** The existing IVP of the trainees only mentioned the vocation of the chocolate making and the graded prompts. Therefore changes were made to it, from OT perspective by adding assessment using task analysis and Model of Human Occupation(MOHO). In task analysis the operational steps<sup>5</sup> of the vocation was divided into three step chains each of nine steps (preparation, melting & molding and unmolding & packing) and each step was graded on the intensity/type of external prompts required from the staff for completion.(Table 1). Task analysis at baseline helped in understanding that the trainees had difficulty in completing even individual steps independently, and were dependent excessively on the staff. It also helped in understanding that they couldn't perform chained multiple steps independently. Using Model of Human Occupation Screening Test (MOHOST)<sup>6</sup> the person, occupation and environment characteristics of the vocation were assessed and it was found to be affected. **Transformation Phase/Intervention (Week 2- 12)** The existing IVP training consisted of picture cues of a few steps, which was changed to a video based OT intervention program(VBOTIP) using video prompting and video modeling. The videos used were the recordings of teachers performing the steps of chocolate making vocation which were edited and loaded into the mobile phones of each trainee. These videos included operational steps as mentioned above and in Table 1. Videos also included social steps (for interacting with the staff and the co-trainees as necessary). The phone memories were kept empty except for these videos to avoid distraction. During the weeks 2-11 video prompting was used i.e. trainees were made to watch one video clip of one step at a time, before performing every step, at 12th week it was found that the trainees became independent in individual steps as per the task re-analysis, (Table 1). **(Week 13-23)** As per this feedback, goals were set and assessed using Goal Attainment Scaling(GAS)<sup>7</sup>, that is participants will be able to complete multiple steps in chain independently. The levels of set goals are as follows (-2) Much less than expected outcome -do not complete even one step, (-1) Less than expected outcome - completes one step at a time, (0)Expected outcome - completes 2-3 steps in one step chain, (+1) More than expected outcome - completes 4-6 steps in one step chain.(+2)Much more than expected outcome - completes 7-9steps in one step chain. During the weeks 13-23 video modeling was used, i.e. trainees were made to watch video clips of chained steps before performing chained steps. **Output Phase (Week 24)** The re-assessment was done using GAS and MOHOST

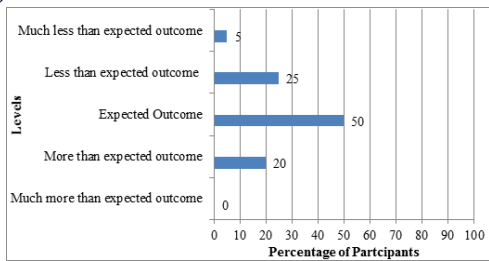
**RESULTS**

**Table 1: Improvement in VP (Individual steps of vocation)**

Sr. No	Steps in chocolate making (Operational Steps)	Baseline Week 1					At 12th Week				
		I5	G4	V3	P2	D1	I5	G4	V3	P2	D1
<b>Step Chain 1-Preparation</b>											
1	Take chocolate bar from storage			3			5				
2	Take bowl from storage			3			5				
3	Take cutting board from storage			3			5				
4	Take knife from storage			3			5				
5	Take mold, spoon from storage			3			5				
6	Take spoon from storage and all the above to the kitchen table			3			4				
7	Cut the chocolate bar into small pieces			3			4				
8	Put the pieces into a bowl		4				5				
9	Put the cutting board and knife in the sink		4				4				
<b>Total</b>		<b>29/45*100=64%</b>					<b>42/45*100=93%</b>				
<b>Step Chain 2- Melting &amp; Molding</b>											
1	Put the bowl into the microwave			3			5				
2	Set the temperature and time				2			3			
3	Wait till the alarm goes off		4				5				
4	Remove the bowl from the microwave		4				5				
5	Place it on the table		4				5				
6	With a spoon pick pour molten chocolate into the slots of the mold			3			5				
7	Repeat till all the slots are filled			3			4				
8	Place the mold in the fridge rack		4				5				
9	Place the remaining molten chocolate bowl in the fridge rack		4				4				
<b>Total</b>		<b>31/45*100=69%</b>					<b>41/45*100=91%</b>				
<b>Step Chain 3-Unmolding &amp; Packing</b>											
1	Remove the frozen mold from the fridge rack			3			5				
2	Unmold the chocolates				2		4				
3	Put them in a bowl		4				5				
4	Wrap each piece with butter paper			3			5				
5	Wrap each piece with wrapping paper			3			5				
6	Put them in another bowl			3			5				
7	Count 10 chocolates in put them in a box		4				4				
8	Arrange these boxes in a carton		4				5				
9	Place the carton in the shelf for shipping						5				
<b>Total</b>		<b>23/35*100=66%</b>					<b>43/45*100=95%</b>				

Performed the steps with prompts- I-Independently, G-Gestural, V-Verbal, P-Physical, D- Totally dependent/ could not complete

**Graph 1: Improvement in VP (Chained steps of vocation as per GAS)**



**Table 2: Improvement in VP (POE characteristics as per MOHOST)**

Vocational Characteristics	Baseline Week 1				At 24 <sup>th</sup> Week			
	F(4)	A(3)	I(2)	R(1)	F(4)	A(3)	I(2)	R(1)
<b>PERSON (P)</b>								
<b>Process Skills</b>								
Knowledge			2		4			
Timing			2			3		
Organization			2			3		
Problem Solving			2			3		
<b>Communication Skills</b>								
Non-Verbal Skills			2			3		
Conversation			2			3		
Vocal Expression			2			3		
Relationship			2			3		
<b>Total</b>	<b>16/32*100=50%</b>				<b>25/32*100=78%</b>			
<b>OCCUPATION(O)</b>								
<b>Motivation</b>								
Appraisal of Ability			2			3		
Expectation of Success			2			3		
Interest		3			4			

Choices		3			4			
<b>Patterns</b>								
Routine			2			3		
Adaptability			2			3		
Roles			2			3		
Responsibility			2			3		
<b>Total</b>	<b>18/32*100=56%</b>				<b>26/32*100=81%</b>			
<b>ENVIRONMENT (E)</b>								
Physical Space			2			3		
Physical Resources			2			3		
Social Groups			2			3		
Occupational Demand			2			3		
<b>Total</b>	<b>8/16*100=50%</b>				<b>12/16*100=75%</b>			

In relation to Occupational Performance(OP):F-Facilitates OP(No outside support required),A-Allows OP(Requires occasional support, I-Inhibits OP (Requires support and/or encouragement),R- Restricts OP(Unable to manage despite support).

**DISCUSSION**

**ROLE OF OT IN BRINGING ABOUT CHANGES TO EXISTING IVP**

A study by Chafee et al<sup>8</sup> states that Occupational Therapists have a unique set of skills that are applicable to support the use of Video Based Interventions(VBI) in the workplace, including incorporating activity analysis to highly complex vocation tasks and simplifying the learning process through technology.

**A)Changes in assessment-**In the present study the task analysis which is an important tool in OT, helped in breaking the vocation into individual steps and chained steps , and thus understanding the level of independence, and requirements of prompts in a better way. Using MOHO to assess the person , occupation , environment characteristics helped in getting a holistic understanding of the vocational profiles

**B)Changes in training-**The changes made in the present study was replacing picture cue cards with VBOTIP(video prompting and

modelling). This is supported by a study by Laarhoven et al<sup>9</sup>, who concluded that vocational tasks are better taught through videos than pictures as pictures cannot convey the various movements that are needed to complete different sequences. They also stated that it is more efficient showing videos that chunk substeps/ steps together rather than presenting a series of pictures to convey the same meaning.

## HOW THESE CHANGES IMPROVED THE VPs

**Improved performance of individual vocational steps-**As per Table 1: There was improvement in level of independence (decreased intensity/type of external prompts by staff) of individual steps, in the step chains of preparation, melting & molding and unmolding and packing of i.e. 29%, 22% and 29% respectively post video prompting. Cannella et al<sup>10</sup> in their study state that video prompting has been shown to be effective in improving independent vocational skills, as it requires shorter periods or attention and memory, both of which are affected in ID. Laarhoven et al<sup>11</sup> who used video based intervention, stated that there was an average improved independence in their study participants (youth with ID) of 24%.

**Improved performance of chained vocational steps-**As per Graph 1: The participants achieved the goals of independent performance of chained steps of vocation of chocolate making, post video modeling. In lines with this Burke et al<sup>12</sup> stated that every participant showed improved percentage of correctly completed task steps as a result of Video Modeling in their study. In a Meta-Analysis of video modeling research by Bellini et al<sup>13</sup> say that it meets the criteria for evidence based instructional practice. And Smith et al<sup>14</sup> mentioned video modeling can be used in participants who may independently initiate but not complete chained steps of a task correctly.

**Improved Person Characteristics of Vocation-** As per Table 2: **D)Process Skills: Knowledge:** of ingredients required and the steps involved in vocation improved. In support of this Williams K F<sup>15</sup> stated that VBI use advances in technology to expand on the concept of behavioral learning by Bandura and information is retained through the use of visual monitoring, cognitive rehearsal and behavioral reproduction.

**Timing:** The attention, focus and speed of performance improved. In line with this Williams K F<sup>15</sup> mentioned that VBI facilitate selectively focusing attention on selected stimulus, helps the learner process the information through visual imagery, and this may have helped the participants respond faster in the form of the performance of task steps in the present study.

**Organization:** Since the VBOTIP provided clear instructions, controlled stimulation and appropriate feedback in the present study it may have led to reduced disorganized off task behaviors like refusal and aggression as per Davies et al<sup>16</sup>.

**Problem Solving:** Participants were able to go back to the video in case of problems/errors and make corrections, supported by a study by Goodman et al<sup>17</sup> video feedback/referencing, when used as an error correction procedure, has been shown to be effective.

## II) Communication Skills- Non Verbal Skills Conversation Vocal Expression:

Participants were able to use communication skills with the help of the social step VBI. In lines with this Park et al<sup>18</sup>, state that using video modeling may improve communication skills like offering assistance, responding appropriately to feedback, and asking clarification for unclear instructions etc in youth with ID.

**Positive Relationships-**Participants became more compliant with the vocational centre staff and this is supported by Ward et al<sup>19</sup> who state that increase in independence in vocational tasks can promote positive relationships with community workers.

**Improved Occupation Characteristics of Vocation-**As per Table 2:

**I) Motivation: Appraisal of Abilities:** As per the concept of levels of occupational functioning by Keilhofner G<sup>20</sup>, i.e. exploration, competence and achievement, the participants of the present study were in the competence level i.e. they had the basic vocational skills of chocolate making, but lacked meaning to their actions. This was taught through the VBOTIP which may have led to development of positive occupational identity.

**Expectation of success:** As per Kielhofner G<sup>20</sup>, motivation is dependent on experience, interpretation and anticipation, therefore positive experiences of success in the vocational task performance provided in this study may have helped the participants in developing expectation of success and judgement of relative mastery i.e. understanding the expectations of staff of vocational centre.

**Interest:** Participants showed increased interest in their vocation of chocolate making. Supporting this Lehman et al<sup>21</sup> state that, the levels of alertness, attentiveness and interest increases when multimedia intervention formats are used.<sup>21</sup>

**Choice:** Participants showed improved choice making and self-determination abilities. In lines with this Wehmeyer et al<sup>22</sup> mentioned that increasing independent performance in vocational tasks can improve emotional and psychological independence and promote self-determination i.e. ability to engage in a chosen, goal focused, self-managed task.

## II)Pattern of Occupation-

**Habits:** Participants' participation in the vocational task became settled and had a regular tendency post VBOTIP. This may be in lines with the concept of errorless learning as mentioned by Kern et al<sup>23</sup> which compensates for neurocognitive deficits by reducing demands on explicit memory (conscious, intentional, recollection of information of factual information, previous experiences and concept) and simultaneously increasing the demands on implicit memory (acquired, unconscious procedural memory) thus improving automating stimulus-response-connections.

**Adaptability:** Participants showed better ability to utilize positive occupational performance feedback and generate adaptive responses. In lines with this Schultz et al<sup>24</sup> mentioned that successful engagement in occupation is said to result in adaptation, defined as occupational adaptation.

**Routine:** Participants showed better adherence to their vocational activity routine post intervention and this can be attributed presentation of intervention in video format as it is highly predictable, repetitive and remains consistent throughout the intervention as per Williams K F<sup>15</sup>.

**Responsibility:** The model of motivation developed by OT Vona Du Toit<sup>25</sup> for vocational rehabilitation of individuals with mental health issues, gives relation between motivation and action, and according to this model, the participants in the present study were in the therapist directed phase and their behavior and skill development is for norm compliance, and through OT intervention they may be moving towards next level, which is patient directed behavior and skill development for self-actualization.

**Improvement of Environment Characteristics of Vocation:** As per Table 2:

**Physical Space & Resources:** VBOTIP using mobile phones which is based on universal design features, like flexibility, simplicity and intuitiveness, may have helped the participants in the present study with cognitive deficits as per Wehmeyer et al<sup>26</sup>.

**Social Support:** The present study helped in decrease in the required intensity/type (Task Analysis)(Table 1) and frequency (MOHOST) of prompts by staff. In lines with this Davies et al<sup>27</sup> mentioned that one of the most promising aspects of VBI is its potential for reducing need for human assistance, decreasing one on one support time of the staff.

**Occupational Demands:** A study by DuPaul et al<sup>28</sup> mentioned techniques in the form of reducing task demands by modifying length or difficulty to improve performance, in lines with the present study task analysis i.e. breaking the task into individual and chained steps.

**Overall Improvement of VP-** As per Table 2: Improvement of 28%, 25%, 25%. in person, occupation and environment characteristics was seen. In lines with this in a study by Kramer et al<sup>29</sup> stated that MOHOST item calibrations remained stable over time and that it can validly measure change

## BENEFITS OF ACTION RESEARCH METHODOLOGY

**At Organizational Level- Optimization of Resources<sup>15,27,30</sup>:** The existing training and support methods at the vocational centre was very

staff intensive. The staff struggled with teaching groupings of students and time management for instructional purposes. So the medium of VBI allowed guaranteed identical presentations of skill for students to repeatedly practice the vocational task without direct staff supervision thus also reducing costs associated with hiring additional personnel.

**Sustainability:** As per Model of Human Occupation(MOHO)<sup>20</sup>, the aim of Occupational Therapy is to always achieve a positive occupational life. It requires sustained occupational engagement in a supportive environment and this process ordinarily begins during therapy and continues on even beyond the period of intervention. Therefore the changes made in the IVP shall continue even after the study at the vocational centre.

**Social Validity:** Mobile phones used in this study for video modeling are potentially less obtrusive, stigmatizing devices<sup>31</sup>, they are also affordable, easy to integrate into workplaces<sup>32</sup>.

**Generalizability:** In a study, Schkade et al<sup>24</sup> state that occupational adaptation as achieved by the participants of this study i.e. improvement can predict the participants' future occupational functioning ability to perform similar functional tasks in generalized settings in lines with the present study where the person, occupation and environment characteristics improved due to VBI inducing occupational adaptation<sup>20</sup>. In a study, Chaffee et al<sup>8</sup> state that VBI is an employment support tool, can be used in a variety of vocational settings without the need for support from OT, Job Coach or Paraprofessionals, so in as per this study the VBOTIP provided can also help in potential future employment settings of the participants.

**At Therapist Level -** This present action research acted as a pilot study for the primary author, and helped in understanding the role of OT in improving the VPs of youth with ID. In lines with this a study by Gudmundsdottir et al<sup>33</sup> stated that reflective piloting can be seen as a form of action research, in that the intention of the action researcher is to learn and to change future action; i.e the purpose is to find out how to conduct a project more effectively. In this study the primary author OT acted as a vocational coordinator and in lines with this in a book by Sitlington P et al<sup>25</sup> the authors mention that transition/vocational coordinators coordinate vocational services rather than providing direct services to the trainees, i.e their role is to train vocational centre staff to utilize evidence based practices to improve participation of trainees in IVP. In lines with this in a study by Coad C<sup>35</sup>, the author mentioned that the role of Occupational Therapist follows the trend to incorporate their skills in this new area of practice as coordinator of a special vocational training program, thus reinstating the role of OT in improving the vocational profiles, as seen in the present study.

## CONCLUSION

Though there are many professionals other than Occupational Therapists also working in the area of improving vocational profiles of youth with ID, this study concludes that the unique role of OT is indispensable. This study used unique OT specific assessment and intervention in improving the VPs of youth with ID at the vocational centre and thus helped in understanding the role of OT in the same. The action research methodology helped in bringing about sustainable change in the VPs.

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