DOCUMENT RESUME

ED 363 020 EC 302 470

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TITLE PMSP: A Program To Develop Perceptive-Motor Skills in Adolescents and Adults with Mental Retardation.
PUB DATE Jun 93
NOTE 24p.; Paper presented at the Annual Meeting of the American Association on Mental Retardation (117th, Washington, DC, June 1-5, 1993).
PUB TYPE Reports - Descriptive (141) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Adolescents; Adults; Daily Living Skills; Foreign Countries; Instructional Materials; *Mental Retardation; *Perceptual Development; Program Development; *Psychomotor Skills; Rehabilitation; Student Evaluation; Training Methods
IDENTIFIERS Spain (Catalonia)

ABSTRACT

This monograph describes the Perceptive Motor Skills Program (PMSP) being used with adolescents and adults having mental retardation in Catalonia, Spain. The program is based on the following principles: chronologically age appropriate activities; use of daily living tools; multiple objectives and working materials; and balance between individualized services and group experiences. In the first section of the report, the different services provided individuals with mental retardation in Catalonia are described. The second section describes the PMSP program in detail including program justification and general features, indicates phases of program development, provides definitions of the general and specific objectives of the program, and gives a general description of over 70 activities which have been organized into 12 units according to materials used and skills developed. Attached are illustrations of sample activity cards, descriptions of the 12 units, sample applications, a group evaluation checklist, and an individual evaluation checklist. (DB)

PMSP: A PROGRAM TO DEVELOP PERCEPTIVE-MOTOR SKILLS IN ADOLESCENTS AND ADULTS WITH MENTAL RETARDATION

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Abstract

We present the Perceptive-Motor Skills Program (PMSP), outlined with the aim to develope multivalent perceptive-motor abilities. These abilities are fundamental because of its intervention in the performance of most laboral occupations and many actions in the daily living. The PMSP is adressed to adolescents and adults with mental retardation. The general characteristics of PMSP are: *adequacy to the chronological period of the target group, by using daily living tools; multivalency of the objectives and the working materials; balance between the individualized adequacy of the Program to each person's needs and the situation of working in group.* The PMSP includes more than 70 Working Proposals distributed in twelve Unities. The Proposals are ordered according to the complexity of the level of performance.

We expose the phases that we have followed to the elaboration of PMSP, guidances for the organization of the small group instruction and the Individual Evaluation Register for the continuous evaluation of each user.

INTRODUCTION

The first section describes the different services where one person with mental retardation can be assisted along the life in Catalonia (Spain). Our work is situated in the context of **Catalonia**, an Autonomous Community of Spain, and is important to know some features of special education in this context for understanding our work.

The second section describes the features of our Program: *justification and general features; phases that we have followed to the elaboration of PMSP; definition of the general and specific objectives of the Program; organization of the working proposals in Unities and Cards;* guidance for the application and evaluation of PMSP, and *results.*

SECTION 1: DESCRIPTION OF THE CONTEXT

Spain has a surface area of 504.750 km2 and a population about 38.500.000 (1991). The country is divided into 17 Autonomous Communities. Our work is situated in the context of **Catalonia**, an Autonomous Community of Spain.

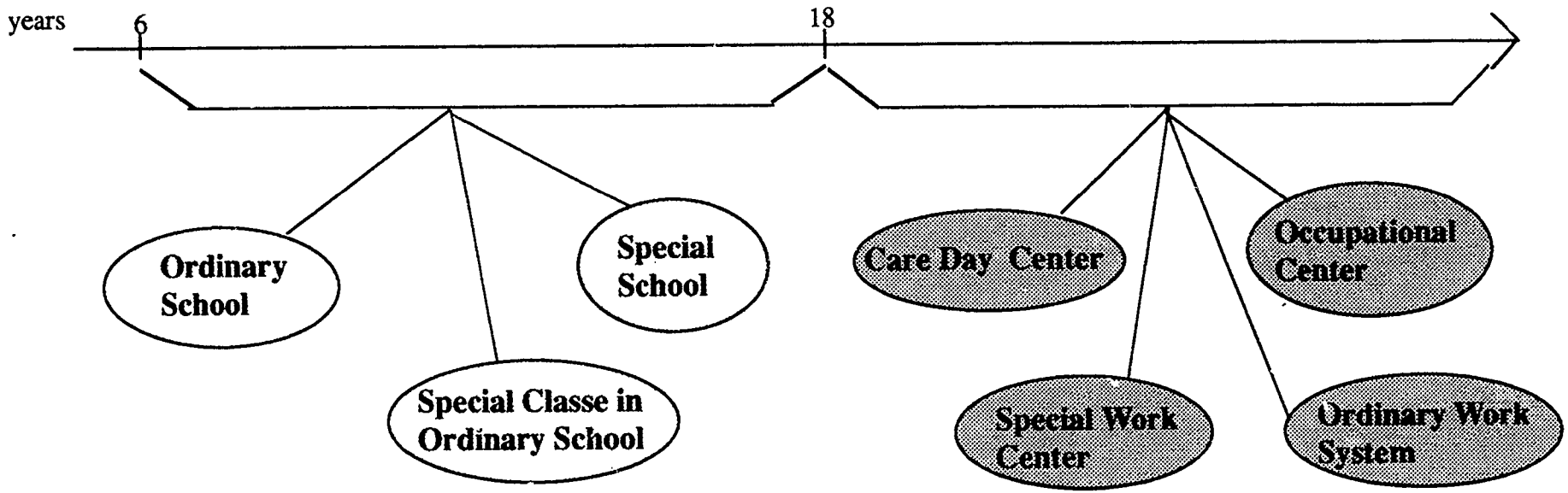
1.1. The general educational system.

Education is considered to be a shared responsability; certain aspects fall to the State while others are assumed by the Autonomies. The General System of *transfer of functions and services* provides the Autonomous Communities with the necessary resources to fulfil their responsability.

The principles of *individualization, integration, normalization and sectorization* are gathered together in the major piece of legislation: *la Llei d'Integració Social dels Minusvàlids, LLISMI (The Law of Social Integration of Handicapped People).* This law regulates the differents Centers or Services oriented to assist education, work and welfare to Persons with Mental Retardation.

Picture 1 represents all the differents services where one person with mental retardation can be assisted along the life:

Picture 1



1.2. School Care

The changes in special education in Spain are proceeding alongside a very important reform of the general educational system. The General Education Law, passed in September 1990, extends compulsory education to 16 years. Primary education will run from six to 12 years and compulsory secondary education from 12 to 16.

In Catalonia, two points are considered in order to decide *where* pupils with special needs or mental retardation have to be located:

1. The kind of curriculum and the services that can assist the student's individual needs.

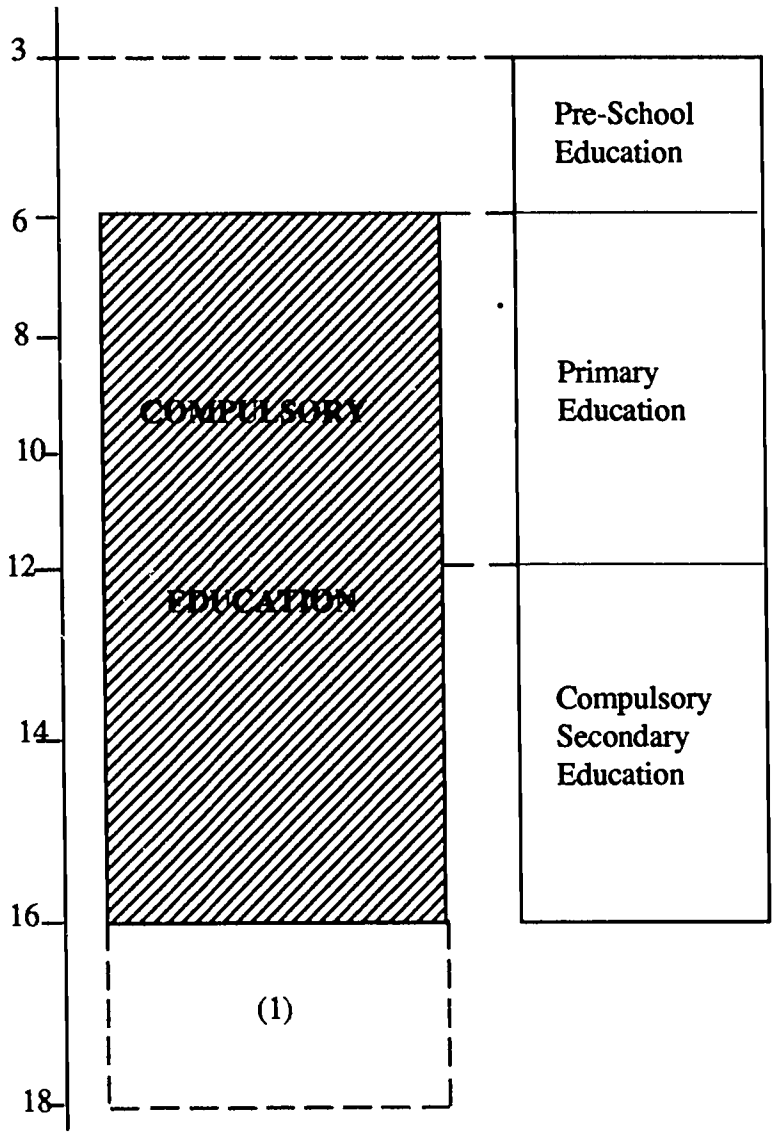
2. The possibility of offering those services in a community's center.

In all the cases, we prefer to offer the educational services in the least restrictive environment. In each county of Catalonia, the EAP (*Equip d'Assessorament Psicopedagògic, Psichopedagogical Assessment Teams*) is responsible for assessing the individual special needs. In function of this evaluation, pupils with mental retardation are assigned to a *special school*, a *ordinary school* or a *special class in ordinary school.*

The EAP also suggests the curriculum's modification for each pupil with special needs. One individualized program is designed for each pupil. This individualized program holds the suggested content, and the distribution of ressources (material, humain, functional).

Picture 2 shows the different kinds of curricula and centers where pupils with special needs are oriented in the new ordenation of the compulsory education.

Picture 2



Kinds of Centers

Kinds of Curriculum

Ordinary School

C1: **Ordinary Curriculum**: For pupils with special educational needs who are able to follow the same work program (with sligh adjustments) as their peers in ordinary class.

C2: **Ordinary Curriculum with some modification**:Some goals have to be adapted because if requires some special teaching, the omission of some materials and the addition of alternative or supplementary activities

Special Classe in Ordinary School

C3: **Ordinary Curriculum with significant modification**.This stage achieves a balance between the orinary and the special program for pupils with special needs. It requires significant modification of the curriculum and includes some hour's work each day in a special classe.

Special School

C4: **Special curriculum with some specific supports**. Here the emphasis is on the pupil's special educational needs which to demand a curriculum that differs from that this of their peers, although it seeks to maintain certain activities in common with their peers.

C5: **Special curriculum**. This is for pupils with more severe disabilities who are taught in closed special units or in special schools. The emphasis is normally on the development of personal autonomy and social skills.

(1) According to the Law of 1990, the students have the right to remain in the school (special or ordinary) going on with the compulsory education until 18 years.

1.3.Post-School Care

Once the compulsory education has finished, one person with special educational needs can be guided to a *Care Day Center, a Sheltered Work Center (an Occupational or a Special Work Center)* or to *Ordinary Work System.*

Care Day Center:

This kind of care is destine for people with profound to severe disabilities, or for persons with behavioral problems. In this center one person can receive specialized care and occupational therapy. One *Individualized Program* is designed for each person. This program is elaborated by the Sector's Assessment Team.

Sheltered Work Center:

You can find in Spain and in Catalonia two models of sheltered work Centers: the *Occupational Center* (OC) and the *Special Work Center* (SWC).

Occupational Center: The Sector's Assessment Team assigns persons to OC when the decrease of their productive work capacity is between the 65% and 85%. The aims of this Center is to get occupational therapy and social and personal adjustment for people with mental retardation. For this reason, half a day is dedicated to each objective. It's not an objective of this center the realization of productive work, but it works for getting persons with mental retardation to be pupils into Special Work Centers, where they will do a real payed work.

Special Work Center: The Sector's Assessment Team assigns persons to SWC when the decrease of their productive work capacity is between the 33% and the 65%. The aim of this Center is the realization of work activities in a sheltered environment. The whole day is dedicated to work, and the people with mental retardation assimilate to ordinary workers.

In the two kinds of sheltered centers, one Individualized Program is outlined for each person by the Center's Team.

In Catalonia, there is a network of Sheltered Centers composed for one Occupational Center and one Special Work Center in each county. Both kind of Centers depend on Social Welfare Department of Catalonia. The first Center (OC) works for the laboral preparation and personal and social training of the persons with disabilities who are served in. The last objective of this center is to facilitate the transition between the occupational center and the special work center.

When people are in the Special Work Center, the work is oriented to facilitate the integration in the ordinary laboral market. The kind of activity is different in each center, and is also different the organizational structure of working groups. In this way, some centers organize mobile work crews for garden-care or other services, and some others make little factories.

SECTION 2: DESCRIPTION OF THE PMSP.[1]

2.1.:PMSP: Justification and General Features.

Perceptive-motor skills (digito-manual dexterity, perceptive habilities, movement dexterity) are fundamental because of its intervention in the performance of most labour occupations and in many actions in the daily living. For this reason, the perceptive-manual area becomes a priority area to work in educational programs adressed to people with mental retardation. In spite of the incidence that is wont to make in this area at the early educative stage, we have been able to chek that is often necessary for handicapped people to go on with manual skills beyond the adolescence as a part of the vocational development. Here we show the **Perceptive-Manual Skills Program (PMSP)**, outlined with the aim to *develope multivalent perceptive-motor habilities in adolescents and adults with mental retardation.* The general characteristics of PMSP are:

-***Adequacy to the chronological age of the target group***: it reduces to the use of school equipment (e.g. paper and pencil), choosing simple tools, assorted and resistent (clothespins, thumbtacks, paper clips, blacksmith's material,...) which we adapt to the training activities at several complex levels according to the objective we wish to work on.

-***Multivalency of the objectives an the working materials***: The objectives of the Program are habilities wich intervene in most actions done in the daily living as well as in the performance of vocational tasks. The material is multivalent since we organize working proposals pointed at penetrating into several objectives from the material.

-***Balance between the individualized adequacy of the Program to each person's needs and the situation of working in group***. Originally, the PMSP has been outlined to be applied in sheltered centers in Catalonia (Spain) where the ratio educator-user is 1/8. For this reason, the PMSP is constructed by cards, one card for each activity. This allows the educator a rational distribution -and effective at the same time- of the gropus in different activities respecting various individual programs.

[1]The PMSP has been elaborated with the support of Isabel Alcaide.

2.2. Identification of basic and multivalent Perceptive-Motor skills.

We identify the multivalent Perceptive-Motor skills through:

-bibliographic analysis

-our observations in an occupational center

-study of a taxonomy of psychomotor behavior (Harrow's taxonomy)

In function of these studies, we define the basic domains and categories (see Table 1)

Table 1: Basic Domains and Categories

DOMAINS	CATEGORIES
Basic Fundamenal Movements They often intervene in the realization of the greater part of the manipulative tasks	**Manual Dexterity:** Coordination between hand-arm and velocity without the intervention of the muscular groups neither depending essentially on visual sense. **Finger Dexterity:** Precision of the manual movements. It doesn't depend on the intervention of the muscular groups neither the visual sense.
Perceptive Habilities **Spatial Discrimination:** a lot of tasks require recognize positions and relate objects in function of their spatial position. **Visual Discrimination:** Special intervention in the recognition of the similarities and differences among the objects. For this reason, this domain is very important for identifying mistakes or deficiences on the working material.	**Spatial Relations:** Perception the position of two or more objects either themself related or being related one to another. This ability is based in the knowledge of the directional concepts. **Perceptual Constancy:** Perception of an object's invariant features as shape, position, size, colour,... **Colour Discrimination:** Ability to recognize and classify the objects in function of their colour. **Size Discrimination:** Ability to recognize and classify the objects in function of their size. **Lenght Discrimination:** Ability to recognize and classify the objects in function of their lenght. **Thickness Discrimination:** Ability to recognize and classify the objects in function of their thickness. **Shape Discriminaion:** Ability to recognize and classify the objects in function of their shape.
Coordinated Abilities: Intervene in most of the manipulative tasks.	**Hand-Eye Coordination:**Ability to take an object coordinating the view of the thing with a manipulative movements. **Finger-Eye Coordination:** Ability to take an object oordinating the view of the thing with the touch of the fingers.
Movement Dexterity: Performance of a complex manual task. It contains movements that require complex learns (ex. screw up nuts to screw with a screwdriver).	

2. 3. Definition of the general and specific objecives of PMSP

GENERAL OBJECTIVE I

Make finger-hand movements with precision in activities that do not require the muscular groups and the visual sense intervention.

Specific Objectives:

I.1.Make finger-hand movements with speed and precision in differents activities, independently of the intervention of the visual sense and the muscular groups.

I.2.Manipulate objects with the fingers with speed and precision in activities that do not require hand-eye coordination.

GENERAL OBJECTIVE II

Perceive the position of different objects (en relació a sí mateix i respecte els uns dels altres).

Specific Objectives:

II.1.Understand the spatial concepts related to objects.

II.2.Place objects into the space related to other objects.

II.3.Recognize the place of an object in the space.

GENERAL OBJECTIVE III

Recognize and interpret the visual stimulus, discerning the similarities among the received stimulus.

Specific Objectives:

III.1.Differenciate among the different features of the objects: colour, size, lenght, thickness.

III.2.Receive and recognize the different objects in function of their spatial position.

III.3.Perceive the invariant features of an object, despite it presents some modification.

GENERAL OBJECTIVE IV

Coordinate visual capacties with some part of the body

Specific Objectives:

IV.1.Coordinate the finger's movements with the sight in different activities.

IV.2.Coordinate the manipulative movements with the sight.

2.4. Organization of the working proposals in Unities and Cards

We have made more than 70 Working Proposals. They are distributed in twelve unities according to the ***material*** that is used and the ***priority habilities***. In each unity, the proposals are ordered according to the complexity of the level of performance. For each proposal, we have elaborated a **working card** where the necessary material to make the proposal is identified by a picture and by the description of the used tools. The working card also suggests exercises ordered in small steps according to the complexity of the level of performance and specifies the objectives that are worked on. Picture 3 shows a sample of working card, and table 2 presents the features of the Unities.

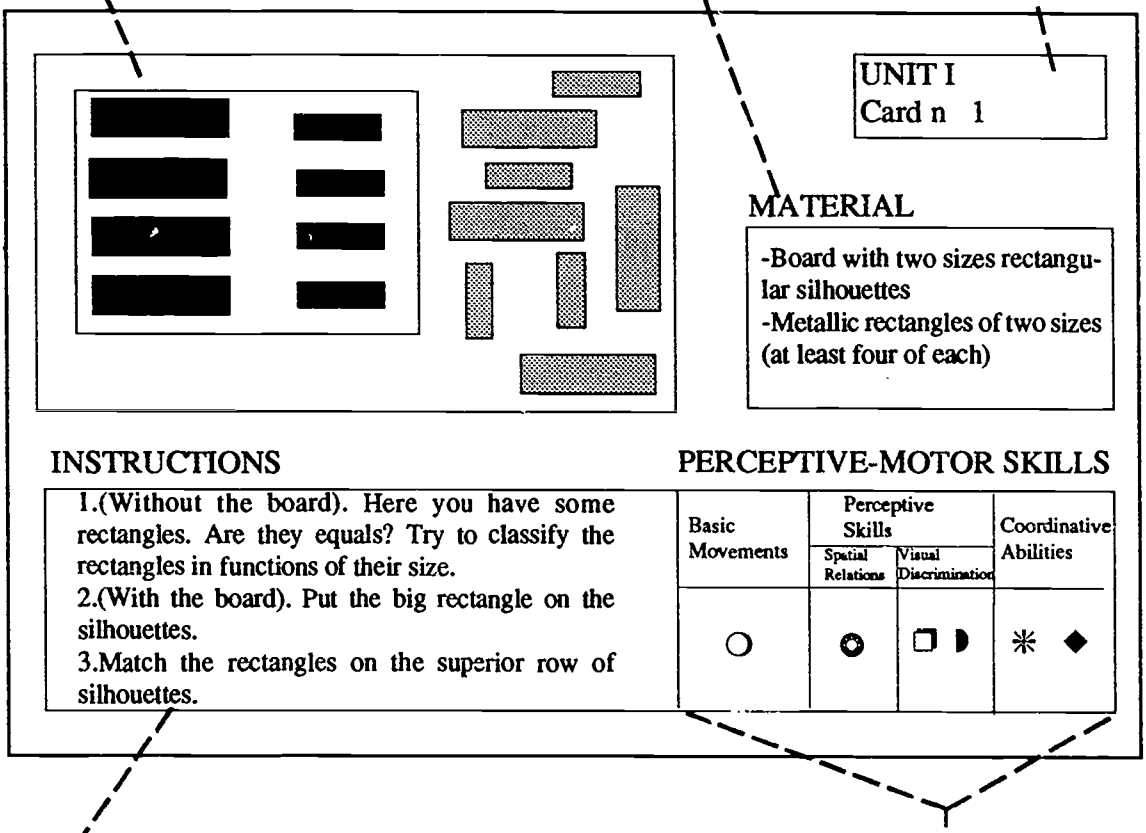
Picture 3

DESCRIPTION OF WORKING PROPOSALS OR ACTIVITIES

This graphic is one of the photographs of the material; it's a wood board (left) with some rectangular black silhouettes. On the right, there are some metallic pieces. These pieces have the same shape and size than the silhouettes.

Each card notes the Unit and the number's card. Generally, the numbers card in each unit is noted in functions of the exercise's complexity

This space describes the necessary material for the exercises



The instructions are the suggested exercises en each card. They are gradually structured in the order of complexity. We note three or four exercises in each card, but in the greather part of them, there are more possibilities of work. In this sense, we prefer to leave a free space for noting other instructions or exercises.

This space shows the perceptive-motor skills that are worked depending on our instructions. We use one symbol for each skill.
Table of References

SKILL	SYMBOL
Manual Dexterity	●
Digital Dexterity	○
Spatial Relations	◎
Colours Discrimination	■
Sizes Discrimination	□
Lenghts Discrimination	▲
Thicknessess Discrim.	▼
Shapes Discrimination	◆
Perceptual Constancy	◗
Eye-Hand Coordination	✳
Eye-Finger Coordination	◆

Table 2: Unities Description

Unit I	**Description:** The cards of this Unit are constituted by boards with silhouettes of different shapes and sizes. On these silhouettes, pupils put metallic pieces of ironmonger's.	**Perceptive-Motor Skills:** We specially work the coordinated skills (eye-hand and finger-hand coordination) in combination with digital dexterity and discriminative skills (of shapes, sizes and colours, above all). In some cards we also work the spatial concepts (up/down; right/left). When pupils do classes, we also work the perceptual constancy.
Unit II	**Description:** In this Unit, we work with little cards. On the cards, there are different geometrical shapes in different colours and sizes.	**Perceptive-Motor Skills:** It specially works specially the perceptive skills: discrimination of sizes, shapes and colours.
Unit III	**Description:** In this Unit, we work with different wood bases. On the bases, there are some cylinders of different sizes, lenghts and thicknesses.	**Perceptive-Motor Skills:**We work the coordinated skills, in combination with manual and digital dexterity. In some exercises, pupil work the spatial concepts. In others exercises is worked the visual discrimination. When pupils do classes, they work also the perceptual constancy.
Unit IV	**Description:** In the cards of this Unit, pupils have to pin coloured thumbtacks on cork boards.	**Perceptive-Motor Skills:** We specially work the coordinated skills and digital dexterity. In some exercises we work the spatial relations.
Unit V	**Description:** This Unit is constituted by pegs and other materials. Pupils have to put the pegs in different objects.	**Perceptive-Motor Skills:** We work the coordinated skills in combination with digital and manual dexterity. In some exercises pupils also work the spatial concepts. In others, they work the discrimination of colours and lenghts.

Unit VI	**Description:** The cards of this Unit are constituted for boxes and bottles of different materials.	**Perceptive-Motor Skills:** We work the coordinated skills in combination with manual and digital dexterity. In some exercises we also work the discrimination of colours, shapes and sizes.
Unit VII	**Description:** In the exercises of this Unit we use ironmonger's pieces.	**Perceptive-Motor Skills:** We specially work the coordinated skills, manual and digital dexterity, perceptual constancy, and discrimination of lenghts, sizes, shapes and thicknesses.
Unit VIII	**Description:** In this Unit, we work with different wood boards. On these boards, there are different silhouettes of pieces. On the silhouettes, pupils have to screw up the metallic pieces with the screwdriver.	**Perceptive-Motor Skills:** We specially work the coordinated skills, manual and digital skills. In some cards we work also the discrimination of shapes and sizes.
Unit IX	**Description:** In each card we work with ironmonger's pieces contained in different boxes. Pupils have to make specially the classification of these pieces.	**Perceptive-Motor Skills:** We specially work the perceptual skills (perceptual constancy, discrimination of shapes, lenghts, sizes, thicknesses). When pupils use tweezers, they also work the coordinated skills.
Unit X	**Description:** In this Unit we work with perforated wood boards.	**Perceptive-Motor Skills:** Pupils specially work the coordination skills, digital dexterity and discrimination of shape, size and colour. In some cards they work the spatial relations.
Unit XI	**Description:** In this Unit there are different exercises to do. For example, the first exercise consists in opening a little wood door.	**Perceptive-Motor Skills:** Pupils particularly work the coordinated skills, and digital and manual dexterity. They work also the spatial relations.
Unit XII	**Description:** In this Unit we work with two dominos with figures in different colours and shapes.	**Perceptive-Motor Skills:** Pupils specialy work the discrimination of shapes, colours and the perceptual constancy.

2.5. Guidance for the application and evaluation of PMSP

We propose the main indications about the ***organization of the small group instruction*** and we outline the ***Individual Evaluation Register*** for the continuous evaluation of each user.

Picture 4 shows a possible application of the program. Each person is represented in the graphic by a circle. The circle with E represents the Educator. The other circles are numbered from 1 to 8 and each number represents one pupil (in Catalonia the ratio educator/pupils is 1/8 in the occupational centers).

Table 1: In this table, there is a unic person (the pupil number 1), who does the card n.3 of the Unit VIII. This card consists in screwing up some metallic pieces in a wood board. The pieces have to match with the figures on the board. The pupil can does this task working without supervision for a quite a long time.

Table 2: In this table there are three persons (pupils numbers 2, 3 and 4). They do the card n.1 of the Unit XII. The material consists in a domino with black and white geometrical figures (circles, squares and triangles).

The instructions consist in playing following the domino's norms. If one of the players knows these norms, they can play without the educator's supervision.

Table 3: In this table there are four persons (the pupils 5,6,7,8). Each pupil does a different card of the Unit I. In all the cards of this Unit the material are wood boards and metallic pieces. These persons require a frequent educator's supervision, because in all the cards the instructions are very shorts.

This situation allows the educator to attend the third table's group.

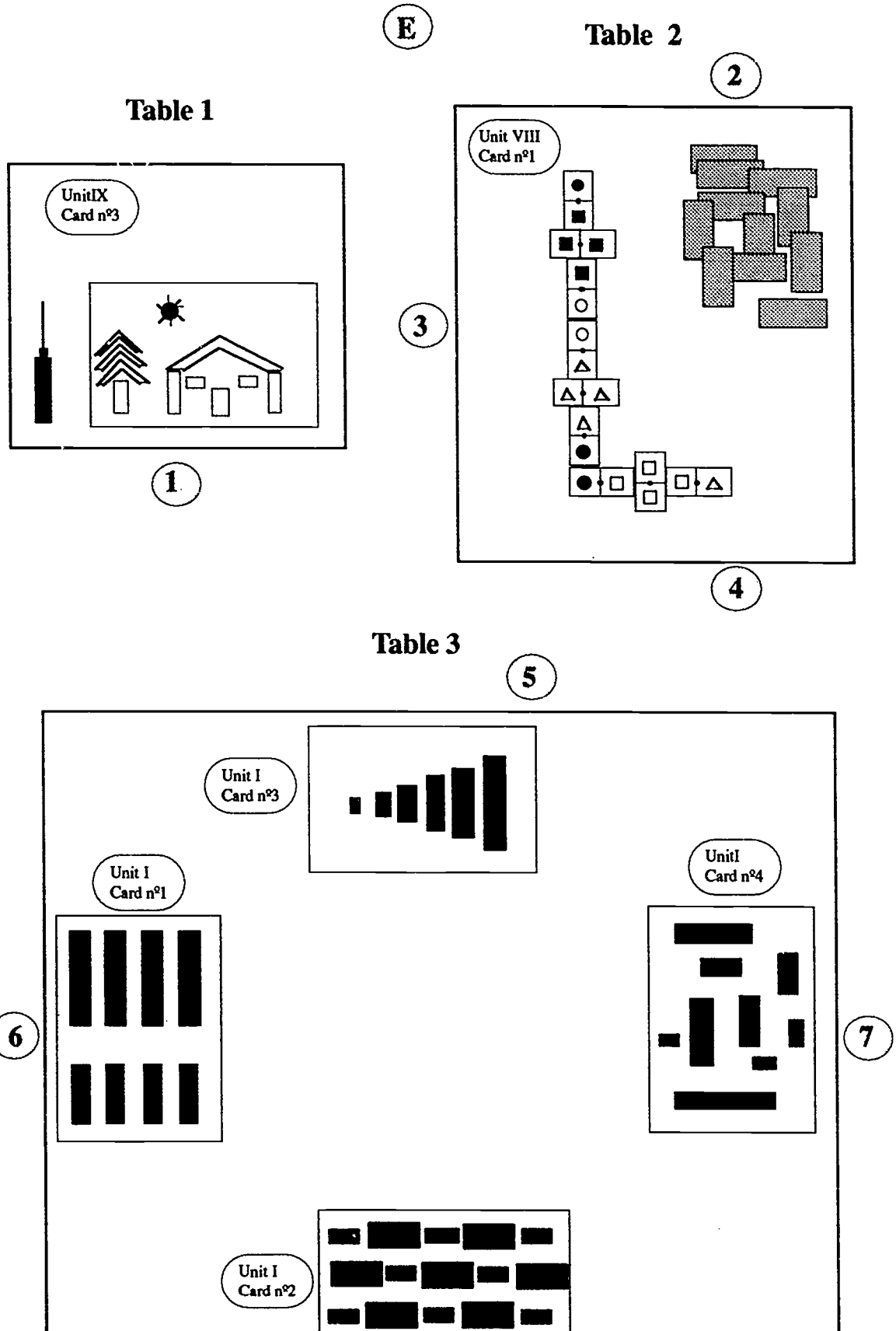
Sequence of work:

1.First, before starting the exercicis, we present the material to pupils. It's important to sign each object with his correct name. In this sense, if we work with washers, we call them by its own name, not only "circles". It's also very important to explain the use of these materials.

2.We have to explain clearly the instructions, using the correct terms. We have to sure that the pupils have understood each instruction.

Picture 4

Possible Situation of Program Application



Prior the application of PMSP we have to avaluate the individual level of each learner. In function of this evaluation we will can design a Individual Application of PMSP. In this sense, we have elaborate a criterial test. The criterial tests are able to evaluate the knowledge of basic dexterities, and they are specially useful when we have to esteem the level of phsycho-motor abilities. Those tests are also useful for making decisions about the curriculum development.

Together with the criterial test we have to bear in mind the educator's assessment and the complementary test. These tests allow us to observe the combined execution of the abilities.

The application of the same test at the end of the Program's application allow us to know the significative differences in the perceptive-motor performances.

We design the ***Group-Situation Evaluation Checklist*** (Picture 5) and the ***Individual Evaluation Checklist*** (Picture 6) for the continuous evaluation of each user.

PMSP

PERCEPTIVE-MOTOR ABILITIES

GRUP-SITUATION EVALUATION CHECKLIST

EDUCATOK: _____

Day _____

PUPIL	UNIT	CARD	PERCEPTIVE-MOTOR ABILITIES												TIME	OBSERVATIONS
			●	○	◎	■	❐	▲	▼	❖	◗	✱	◆			
Luci	I	1		+	-		+				+	+	+			She can not differenciate between left and right.
Manolo	I	1		+	*		+				+	+	+			The supervision is necessary for differenciating among the spatial concepts.

PERCEPTIVE MOTOR SKILLS			
Manual Dexterity	●	Lenghts Discrimination	▲
Digital Dexterity	○	Thicknesses Discrim.	▼
Spatial Relations	◎	Shapes Discrimination	❖
Colours Discrim.	■	Perceptual Constancy	◗
Sizes Discrim.	❐	Eye-Hand Coordination	✱
		Eye-Finger Coordination	◆

TIME	
Fast	F
Normal	N
Slowly	S

ASSESSMENT	
Correct	+
Mistakes	*
Bad	-

PMSP

PERCEPTIVE-MOTOR SKILLS

INDIVIDUAL EVALUATION CHECKLIST

PUPIL: Marta

DAY	UNIT	CARD	PERCEPTIVE-MOTOR SKILLS												TIME
			●	○	◎	■	❐	▲	▼	❖	◗	❋	◆		
9-III-92	I	4		+	*		+				+	+	+		N
11-III-92	I	9		+	*		*				+	+	+		S
13-III-92	III	4	+	+			*	+	-		*	+	+		N
16-III-92	III	5	+	+	*		+		*		+	+	+		S
18-III-92	IV	6		+	+	+				+	+	+	+		N
23-III-92	IV	7		+	+	+				+	+	+	+		S
25-III-92	IV	8		+	*	+				+	+	+	+		S
27-III-92	VII	3	+	+			+		*	+	+	+	+		S
30-III-92	IX	1					+	+	+		+	+	+		S
1-IV-92	VII	4	+	+			+	+	*		+	+	+		
3-IV-92	VII	3	+	+			+		+	+	+	+	+		N

PERCEPTIVE-MOTOR SKILLS			
Manual Dexterity	●	Lenghts Discrimination	▲
Digital Dexterity	○	Thicknesses Discrim.	▼
Spatial Relations	◎	Shapes Discrimination	❖
Colours Discrim.	■	Perceptual Cosntancy	◗
Sizes Discrim.	❐	Eye-Hand Coordination	❋
		Eye-Finger Coordination	◆

TIME	
Fast	F
Normal	N
Slow	S

ASSESSMENT	
Correct	+
Mistakes	*
Bad	-

OBSERVATIONS First, Marta shows some problems in spatial orientation and sizes discrimination. She has disabilities in thickness discrimination, too. With constant supervision of the educator, Marta does less mistakes but the rhytme is very slow.

2.6. Results.

The PMSP is at experimental stage and we already have some encouraging elements which indicate that the course we are following is right. Among this elements there are the motivation noticed in the users that are working the proposals and the good attitude of the educators.

Now, we are adapting the PMSP to a computer-based environment in collaboration with the Computer Science Department of the *Universitat Autònoma de Barcelona* . This adaptation wil allow us to extend the target group of this Program.