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APPLICATION OF JEAN PIAGET'S COGNITION DEVELOPMENT TASKS ON STUDENTS WITH SPECIAL EDUCATIONAL NEEDS

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Abstract:
The article presents a correlative model based on the Piagetian phenomena and student with special educational needs. Approaches are indicated allowing the mental age to be defined by applying Jean Piaget's experiments, as well as doing it vice versa – defining the stage as per Jean Piaget in determining the IQ of the individual. The proposed model allows the general education teacher and also the individual progress development team in school, to get easily oriented on the capabilities of the student with special educational needs and prepare individual programs adequate to the student's development.

Keywords: Piagetian inventories, student's development, special educational needs

1. Introduction

In recent years, the activities aimed at the inclusion of children and students with special educational needs (SEN) in Bulgaria are particularly multidirectional. This is due to the percentage of disabled children in kindergardens and students in schools. Such a fact implies that general education teachers – also referred to as mainstream teachers – are to face various obstacles, the primary one being is what to teach the disabled children and students, rather than to find which approach to select. To some extent solving the problem is done by development of individual education programs (also known as the IEPs) by the individual progress development team in the respective school, but such an approach is not always efficient. For that reason, in this article we propose a model, which might support the mainstream teacher in assessment of the most effective approach for the teaching process in a classroom with a SEN student.

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2. Jean Piaget's Stage Model

Year 2016 marks the 120th anniversary of the birth of the great Swiss biologist, psychologist and logician Jean Piaget**.** The past proves**,** that he offered one of the best argued theories on the intellectual development of a child. His theoretical ideas meet exceptional support since those are cleverly supported by hundreds of fine and simple experiments, serving a multitude of aspects of the thinking of a child (Humphreys and Parsons, 1979).

Piaget separates the cognitive development of children and juniors into four stages:

- sensorimotor;
- preoperational;
- concrete operational;
- formal operational.

Piaget is convinced that all children undergo consequently those stages, and no one cannot avoid a particular stage, though some children pass through the stages at different pace (Slavin, 2018).

As a generalization, one might state, that a student in a preoperational stage has a his own logic about the world, good enough for him, but this logic has nothing in common with the logic of regular school students. For example, the teacher might "teach" him to say that a plasticine ball and another such ball smashed to being flat are equal in size and weight, but the student shall not thrust that and shall accept such a statement as another proof that teachers lie to little children.

A student at a stage of particular operations, possesses the logic of the adults, but is capable of logical treating only those matters, that are subject of his own experience and accepts via his own senses (Shayer, 2008).

This means that complex ideas and concepts are beyond his capacities, which leads to the fact that words and formulas are remembered but not understood. Students really become capable of understanding abstract and complex ideas when they reach the level of formal operations (Piaget & Inhelder, 1956).

The determination of whether a child has or has not reached a particular stage is affected by experiments popularly known as the Piaget's phenomena. In this sense coping with every phenomenon suggests coordinated action of a system of reversible logical operations (Marwaha et al., 2017). For example, a child, who has just reached a certain level of thinking cannot operate at a higher stage (Inhelder & Piaget, 1958).

2.1 Experiment

An experiment linked with the Piaget's phenomena aimed at application of those to various SEN students was carried out. Subject to research were in total some 56 children and students with intellectual disability (mild and moderate), hearing loss, speech and language disabilities and a few absolutely normal students.

The phenomena realized were as follows:

A. Volume preservation

The phenomenon establishes the understanding of the constant volume concept for an object subjected to deformation. Object's volume is defined by the volume of water it displaces when immersed in a vessel filled with water.

Level 1 (age 6). The child does not accept the concept for substance preservation, neither for weight, or for volume.

Level 2 (age 7–8). The child accepts substance preservation concept, but not for weight, or volume.

Level 3 (age 9–10). The child accepts on some occasion preservation of weight, but volume preservation is not accepted. Child's judgement is based on the dimension, which impresses him most. The child fixes on one dimension at a time only.

Level 4 (age 8–11). The child accepts preservation of weight, but not that of volume. The latter changes according to the shape and position of the object

- a ball divided in separate parts takes less space, since "smaller parts are scattered all over".
- a laying cylinder "pushes" the water through larger surface, so that it takes more space.

Level 5 (age 9–11). The child accepts volume preservation only on some occasions.

Level 6 (age 10–12). The child accepts volume preservation on all occasions. The child often justifies this by addressing onto preservation of weight and matter.

B. Preservation of numerical equality between two entities

The phenomenon examines how by the children the double-single meaning correspondence between two pluralities leads to a judgement for respective equality.

a. Length preservation

The goal of this phenomenon is to settle the criteria used by a child in assessing length comparing a long stick and wavelike ribbon.

Level 1 (age 4–5). The child assesses the length of the lines regarding start and end. The stipulation is that the strait stack and folded ribbon are equally long, even after seen the latter straiten, prior to being brought back to its initial form.

Level 2 (age 5). Static assessment: the child estimates the length by the end points.

Assessment by movement (following the line by finger): in this case the folded ribbon seems to the child longer than the straight line. Returning to the static case, the child goes back to its initial judgement.

Level 3 (age 6–7). Child assesses according to the stretch between two cuts.

b. Cover a bottle with cloth

The experiment shows that objects are physically stable and exist even when they are out of the sight of a physically present child.

Level 1. Children manage to cope with the experiment.

Level 2. Children fail to cope with the experiment.

c. Liquid transfer – volume remains constant (volume preservation)

The phenomenon establishes how the constant volume concept is being learned when a certain object is deformed.

Taken are two identical cups, already filled with equal volumes of water. Taken is a dinner-plate and the in the presence of then child, all the water contained in one of the cups I poured into the plate. The other cup remains untouched. The child is questioned where is more water.

Results:

1) The child says that in the tall cup the water was more (i.e. the empty cup).
2) The child says that in the dinner-plate the water is more.
3) The child says that the amount of water in the tall cup and in the dinner-plate is equal.

C. Abstract height

Effected for all children with disabilities, age not considered. Age of normal children is 7 to 11.

Established is the presence of hardships linked to the preservation issues, since the concept of reversibility is already assimilated.

Question: if Ivan is taller than Mary, and Mary is taller the Theodor, who is the tallest?

1) Ivan is taller than Theodor,
2) Mary is taller than Theodor,
3) Mary is taller than Ivan, etc.

The correct answer is Ivan is taller than Theodor. All other answers are wrong.

Hypotheses are as follows:

1) Individuals within the absolute norm show results at level corresponding to their calendar age. If an individual within the absolute norm is 10, the results of the experiments shall correspond the age level 10 or 11.
2) When an individual is with intellectual disability, the calendar age shall not correspond to mental age, which is to be seen in corresponding level results. For example, if we have an individual being with mild intellectual disability and is aged 10, the results would be that of an individual aged 7-8, i.e. the lag behind is one level compared to the ones within the absolute norm.
3) If and individual is with moderate intellectual disability, then such an individual's results would be even worse than those of individuals with mild intellectual disability, due to greater metal deficiencies.
4) For individuals having hearing loss and individuals having speech and language disorders, it is expected that the results will be close to individuals of the absolute norm.

Working tasks are linked to the following correlated suppositions:

1) For example, if an individual manages to solve a higher experimental level of the *Volume preservation* experiment better than expected for his age, will the same

individual solve the *Liquid transfer* experiment also better than expected for his age?

2) Will an individual solving at higher level *Retaining numeric equality in 2 entities* experiment be able to solve on a higher level the *Length preservation* experiment?

3. Results

In results assessment correlation analysis was used. The application is used to describe the strengths and the direction of mutual dependence between changing values.

Correlation coefficients are a statistic measure, representing the mutual dependence between two random variables. Various correlation coefficients are used in accordance with the measurement scale used in expressing the random values.

In operating Spearman (rs) coefficient for rank correlation were used.

The absolute value of correlation coefficient is between the limits o t 1.

3.1 Dependence strength

The interpretation of the correlation coefficient strength (dependence strength) is to some extent casual. It depends on the specifics of the phenomenon subject to research and usually is done with the context of the correlated variables. Although there are some empiric rules that might be applied when interpreting correlation coefficients.

When the value is 0 – dependence is absent, up to 0.3 – dependence is week, from 0.3 to – moderate dependence, from 0.5 to 0.7 – significant dependence, from 0.7 to 0.9 – strong dependence, above 0.9 – very strong dependence, when 1 – dependence is functional. (https://www.btu.bg/statexcel/file8.html).

3.2 Data Analysis

Start analysing data with positive correlation. If the correlation coefficient is a positive number, the dependence is positive, rising – to grater values of the first variable correspond greater values of the other variable (Table 1).

Data having negative correlation also bear some information, since if the correlation coefficient is a negative number, the dependence is negative, downwards going to grater values of the first variable correspond smaller values of the other variable.

In the first place, from the table is clear that mutual dependency *Age – Class* is obviously increasing. Practically when the age rises, the class is rising too. This just a hint, that the data is valid.

Next correlation is that of *Age – Preservation of Volume*. Here is accounted the positive correlation 591**, add to that a substantial dependence. This means, that the elder the students are, the easier they handle the *Preservation of Volume* phenomenon. Practically this means that the child accepts *Preservation of Volume* in all cases. The child often justifies the fact referring to preservation of weight of matter as well (Table 1).

Table 1: Spearman's Correlative Data Analysis

Correlative data											
			Age	**Preservation of Volume**	**Preservation of numerical equality between two entities**	**Preservation of Length,**	**Cover a bottle with cloth**	**Liquid transfer**	**Abstract Height**	**IQ**	**Class**
Spearman's rho	Age	Correlation Coefficient	1.000	,339*	-,415**	-.047	,323*	.044	.121	.092	,909**
		Sig. (2-tailed)		.011	.001	.733	.015	.746	.373	.500	.000
		N	56	56	56	56	56	56	56	56	56
	Preservation of volume	Correlation Coefficient	,339*	1.000	.150	,591**	-.247	,421**	-,537**	,456**	,273*
		Sig. (2-tailed)	.011		.269	.000	.067	.001	.000	.000	.042
		N	56	56	56	56	56	56	56	56	56
	Preservation of numerical equality between two entities	Correlation Coefficient	-,415**	.150	1.000	.183	-,451**	.259	-,419**	.061	-,493**
		Sig. (2-tailed)	.001	.269		.177	.000	.054	.001	.656	.000
		N	56	56	56	56	56	56	56	56	56
	Preservation of length	Correlation Coefficient	-.047	,591**	.183	1.000	-.187	,436**	-,517**	.189	-.086
		Sig. (2-tailed)	.733	.000	.177		.167	.001	.000	.164	.528
		N	56	56	56	56	56	56	56	56	56
	Cover a bottle with cloth	Correlation Coefficient	,323*	-.247	-,451**	-.187	1.000	-.217	,486**	-.117	,480**
		Sig. (2-tailed)	.015	.067	.000	.167		.108	.000	.390	.000
		N	56	56	56	56	56	56	56	56	56
	Liquid transfer	Correlation Coefficient	.044	,421**	.259	,436**	-.217	1.000	-,486**	,584**	-.068
		Sig. (2-tailed)	.746	.001	.054	.001	.108		.000	.000	.616
		N	56	56	56	56	56	56	56	56	56
	Abstract height	Correlation Coefficient	.121	-,537**	-,419**	-,517**	,486**	-,486**	1.000	-.169	.197
		Sig. (2-tailed)	.373	.000	.001	.000	.000	.000		.213	.145
		N	56	56	56	56	56	56	56	56	56
	IQ	Correlation Coefficient	.092	,456**	.061	.189	-.117	,584**	-.169	1.000	.046
		Sig. (2-tailed)	.500	.000	.656	.164	.390	.000	.213		.734
		N	56	56	56	56	56	56	56	56	56
	Class	Correlation Coefficient	,909**	,273*	-,493**	-.086	,480**	-.068	.197	.046	1.000
		Sig. (2-tailed)	.000	.042	.000	.528	.000	.616	.145	.734	
		N	56	56	56	56	56	56	56	56	56

Next interlink worth attention is *Preservation of Volume - Preservation of Length,* 591**. A positive correlation is recorded with a significant dependence. This means that

student able to solve the *Preservation of Volume* handle very well *Preservation of Length* also.

A positive correlation exists in *Preservation of Length - Preservation of Volume,* 591** with a substantial dependence as in *Preservation of Length – Abstract Height, 517***. This means that these phenomena are solved easier, but by students who are not intellectually disabled, since operating at a higher level is required.

As a proof is the mutual link *Cover a bottle with cloth - Preservation of numerical equality between two entities* - 451**. The negative correlation indicates that children can easily handle an elementary phenomenon typical for the sensorimotor stage, but in no way with the phenomenon *Preservation of numerical equality between two entities,* which is on the superior pre-operational stage.

On the other hand, those who have solved the phenomenon *Abstract Height* (level 2 and 3), face no problems in solving the easier phenomenon *Cover a bottle with cloth,* 486**, whereas here the correlation is positive, on the border between moderate and substantial dependence. Additional support to this thesis is the following negative correlation between *Abstract Height - Preservation of Volume* 537** having substantial dependence. This may mean that students who easily handle *Preservation of Volume* are unable to handle *Abstract Height.* Here the most probable explanation is that students with intellectual disability face no problems handling the easier phenomenon, but a case requiring mental conclusions bordering formal and specific operations, are beyond the mental capacity of such children.

The negative correlation is observed between *Age – Numeric entity*. Phenomenon *Numeric entity* considers double-single correspondence between two entities leads to stipulation for equivalence of the two. Here is seen the negative correlation – 046, being a moderate one. Analysis hints that the more age grows, the more students fail, since coincidence and stable equivalency is required. The child should eventually accept that in every case the quantities remain equivalent independently from of the partial transformations in the elements' arrangement.

The same situation is preserved with the phenomena *Preservation of numerical equality between two entities – Abstract height,* 419**. There is a negative correlation and the explanation is – the simpler phenomenon of two - *Preservation of numerical equality between two entities* – is solved by student with various deficiencies, but not the harder one which needs operation on higher stage (Table 1).

Positive are and the following two correlations: *Liquid transfer – Preservation of Volume,* 421** and *Liquid transfer - Preservation of Length,* 436**. Here the explanation is that the phenomena examine similar phenomena and logically when the children manage to solve the first problem, they easily manage to solve the other.

It is a different story with the correlation *Liquid transfer – Abstract Height -*,486**. The negative correlation, moderate dependence hint that the easy phenomenon – *Liquid transfer* is solved, because is at inferior stage, contrary to *Abstract Height* phenomenon.

This means that students, for example, having mild or moderate intellectual

disability, would not be able to solve the *Abstract Height* phenomenon, in contrast to *Liquid transfer.*

As a confirmation of this conclusion is also the positive correlation *Liquid transfer – IQ,* 584**, which is substantial. This means that the higher the IQ of the examined person, the easier the person tackles the phenomenon and vice versa.

Intellectual disability is the probable explanation as well for the negative correlation *Class - Preservation of numerical equality between two entities* – ,493**. I.e. although increase in class, the intellectually disabled student fails to overcome the respective stage level at which he operates.

The correlation *Preservation of numerical equality between two entities - Cover a bottle with cloth*-,451**, a moderate dependence is marked as negative. Here the explanation is the following one – the more fail to solve one phenomenon, the more succeed to cope with the other one. This is to be logically expected, since the phenomenon *Preservation of numerical equality between two entities* is of concrete operations level – age 4-7 and as shown earlier, hard to understand, particularly for children with some deficiencies. On the contrary, the - *Cover a bottle with cloth* experiment is some of the simplest and is of the sensorimotor stage – age 0-2.

A positive correlation ,591**, yet with substantial dependence we have with the mutual link between phenomena *Length preservation - Volume preservation.* As successfully the students solve one phenomenon, equally well they solve the other one. Here one can build the opportunity to carry out just one of the experiments – the easier one for the experimenter – and validate the results for the other experiment. In addition, due to significant dependence between the two phenomena, those could be used in defining the mental age of the examined individual and consecutively calculate the IQ.

A more detailed data, distributed according to deficiencies, is presented analysed on the pages herein below.

Table 2: Correlation between Deficiency and Abstract Height

Crosstab					
			Abstract Height		
			1,0	2,0	**Total**
Disability	Hearing loss	Count	5	2	7
		% within Abstract Height	22.7%	5.9%	12.5%
	Individuals with mild intellectual disability	Count	5	17	22
		% within Abstract Height	22.7%	50.0%	39.3%
	Individuals with moderate intellectual disability	Count	1	8	9
		% within Abstract Height	4.5%	23.5%	16.1%
	Individuals with speech and language disabilities, developmental delay	Count	2	6	8
		% within Abstract Height	9.1%	17.6%	14.3%
	Individuals with down boarder of absolute norm	Count	1	1	2
		% within Abstract Height	4.5%	2.9%	3.6%
	Individuals without disabilities – absolute norm	Count	8	0	8
		% within Abstract Height	36.4%	0.0%	14.3%
Total		Count	22	34	56
		% within Abstract Height	100.0%	100.0%	100.0%

Five children with hearing loss have 22.7% results at level 1 – phenomenon *Abstract Height*, two children having the same deficiency have 5.9% at level 2 for the same phenomenon (Table 2).

Five children with mild intellectual disability have 22.7% positive results at level 1, 17 children or some 50% at level 2.

Herein some clarifications are needed. This phenomenon is typical in operating and solving by children that are in preoperational stage. For example, if you say that Ivan is taller than Theodora and that Theodora is taller than George, the children shall not understand that Ivan is taller than George, but children in stage of particular operation shall have no problems at understanding such arrangement and classification.

Synchronized with our hypothesis, aural deficiencies students have low number of wrong answers, contrary to those with mild intellectual disability. Some 50% to cope with this problem, which corresponds to a lower level, whereas 22.7% fail to cope with this phenomenon (Table 2).

Table 3: Correlation between Deficiency and Volume Preservation

			Volume preservation						Total
			1,0	2,0	3,0	4,0	5,0	6,0	
Disability	Hearing loss	Count	2	5	0	0	0	0	7
		% within Preservation of numerical equality between two entities	15.4%	27.8%	0.0%	0.0%	0.0%	0.0%	12.5%
	Individuals with mild intellectual disability	Count	5	8	3	5	1	0	22
		% within Preservation of numerical equality between two entities	38.5%	44.4%	37.5%	62.5%	100.0%	0.0%	39.3%
	Individuals with moderate intellectual disability	Count	3	3	2	1	0	0	9
		% within Preservation of numerical equality between two entities	23.1%	16.7%	25.0%	12.5%	0.0%	0.0%	16.1%
	Individuals with speech and language disabilities, developmental delay	Count	3	2	2	1	0	0	8
		% within Preservation of numerical equality between two entities	23.1%	11.1%	25.0%	12.5%	0.0%	0.0%	14.3%
	Individuals with down boarder of absolute norm	Count	0	0	1	1	0	0	2
		% within Preservation of numerical equality between two entities	0.0%	0.0%	12.5%	12.5%	0.0%	0.0%	3.6%
	Individuals without disabilities – absolute norm	Count	0	0	0	0	0	8	8
		% within Volume preservation	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	14.3%

Total	Count	13	18	8	8	1	8	56
	% within Volume preservation	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Here the attention is drawn by solutions made by individuals having mild and moderate intellectual disability. This is so since individuals having other deficiencies manage to cope with the higher levels of this phenomenon (Table 3).

It is logical to suppose that individuals without deficiencies or such within the lower limits of normality, that the results of these shall be situated at the right-hand part of the table, i.e. closer to the higher levels.

Summing up, the largest number of the examined individuals having deficiencies fall within the first two levels – Level 1 (age 6), where the child does not accept preservation neither of matter, weight or volume and Level 2 (age 7-8), the child accepts preservation of matter, but not that of weight or volume.

Quite naturally, the largest share of the total number belongs to the individuals having mild and moderate intellectual disability – 13 having mild intellectual disability and 6 moderate intellectual disabilities.

Table 4: Correlation between Deficiency and Preservation of Numerical Equality between two Entities

Crosstab						
			Preserves the numerical equality of two countables			
			1,0	**2,0**	**3,0**	**Total**
Disability	Hearing loss	Count	0	0	7	7
		% within Preserves the numerical equality of two countables	0.0%	0.0%	15.9%	12.5%
	Individuals with mild intellectual disability	Count	6	0	16	22
		% within Preserves the numerical equality of two countables	54.5%	0.0%	36.4%	39.3%
	Individuals with moderate intellectual disability	Count	5	0	4	9
		% within Preserves the numerical equality of two countables	45.5%	0.0%	9.1%	16.1%
	Individuals with speech and language disabilities, developmental delay	Count	0	1	7	8
		% within Preserves the numerical equality of two countables	0.0%	100.0%	15.9%	14.3%
	Individuals with down boarder of absolute norm	Count	0	0	2	2
		% within Preserves the numerical equality of two countables	0.0%	0.0%	4.5%	3.6%
	Individuals without disabilities – absolute norm	Count	0	0	8	8
		% within Preserves the numerical equality of two countables	0.0%	0.0%	18.2%	14.3%
Total		Count	11	1	44	56
		% within Preserves the numerical equality of two countables	100.0%	100.0%	100.0%	100.0%

Similarly, the results of the individuals without deficiencies are on the upper levels – 3 and 4, whereas intellectually disabled individuals are oriented towards Level 1 (age 4 to 5), at which is established the absence of correspondence and equivalency. Therefore, the child is unable to establish the correspondence one by one and asses length or density of the selections observed using global comparisons (Table 4).

Of interest is the fact that there are no intellectually disabled individuals of Level 2 (age 4 to 7), at which the child establishes correspondence, but there is the lack of understanding durable equivalence.

Table 5: Correlation between Deficiency and Liquid Transfer

Crosstab						
			Liquid transfer			
			1,0	**2,0**	**3,0**	**Total**
Disability	Hearing loss	Count	6	0	1	7
		% within Liquid transfer	20.0%	0.0%	9.1%	12.5%
	Individuals with mild intellectual disability	Count	16	5	1	22
		% within Liquid transfer	53.3%	33.3%	9.1%	39.3%
	Individuals with moderate intellectual disability	Count	4	5	0	9
		% within Liquid transfer	13.3%	33.3%	0.0%	16.1%
	Individuals with speech and language disabilities, developmental delay	Count	4	4	0	8
		% within Liquid transfer	13.3%	26.7%	0.0%	14.3%
	Individuals with down boarder of absolute norm	Count	0	1	1	2
		% within Liquid transfer	0.0%	6.7%	9.1%	3.6%
	Individuals without disabilities – absolute norm	Count	0	0	8	8
		% within Liquid transfer	0.0%	0.0%	72.7%	14.3%
Total		Count	30	15	11	56
		% within Liquid transfer	100.0%	100.0%	100.0%	100.0%

The greatest share belongs again to the intellectually disabled individuals. Some 16 intellectually disabled students solved the problem on Level 1 (age 5), where the visible ratio between the quantities directly defines the child's opinion (Table 5). The child believes that quantities increase or decrease proportionally to the level, width and number of vessels.

Here the accent is on the students with hearing loss, who also mark inferior levels compared to individuals free of deficiencies but cope well better than those being intellectually disabled do.

4. Discussion

4.1 Qualitative analysis of the results obtained by solving the phenomena

An interest is the explanations given by the students on their experience gained during solutions of the phenomena.

4.2 Volume preservation

Most of the intellectually disabled children enjoyed the Plasticine. Often spill the water and are scared by this, but like to drop the ball from high position in order to spill the water. All intellectually disabled individuals – 100% - say that when Plasticine is inserted into the water, the water would change in colour – shall turn red or black according to

Plasticine's colour and at the same time do not find any link between the fact that the volume of the object is defined by the space it occupies being immersed.

Some would like to drink the water; prior the ball is dropped into the water and after that in order to understand if taste remained the same.

Some students say that nothing will change in the glass of water, and that Plasticine does not change the colour of the water.

There are no intellectually disabled students, no matter of their calendar age, say 15 or 16, who are able to reach Level 5 (age 9–11), where the child accepts volume preservation on some occasions only, or Level 6 (age 10–12), at which the child accepts the volume preservation on all occasions and often justifying it by quoting preservation of weight and matter.

4.3 Preservation of matter

For some intellectually disabled students, for this phenomenon they lack the idea of bigger, smaller, and equal quantity – are unable to make a ball of the same size, put in much more material and when asked to remove some of the material, they remove too much.

Most often, the SEN students are identified at level 1. When a ball is changed into the shape of pancake, the children say that in there is more Plasticine in the pancake. Typically, the presence of mild or moderate intellectual disability is identified at level 1. Students having hearing loss or those absolutely normal have no problems reaching Level 3 (age 7–12), at which level the matter preservation seems a necessity to the child, whatever transformations the initial mater has undergone.

4.4 Length preservation

With this phenomenon most of the individuals also solve the problem at level 1. The answers are grouped around the difficulties in defining the identities of both lines. All students being mildly or moderately intellectually disabled making the first movement between the line and the folded strip, draw the conclusion that the strip is shorter. After the strip is spread along the line, the students observe that the two are equal, i.e. they succeed in finding out the equality between the strip and the line, by stretching the strip. When strip is folded, the strip is defined as very short. All examined individuals who are mildly intellectually disabled reach up to Level 2 (age 5). Returning to the static situation, the child returns to its initial stipulation.

Individuals free of any deficiencies have no problems with the levels and reach maximum level 3, at which assesses length by measuring the distance between the cuts.

5. Conclusions

1. From point of view of Piaget's theory, the cognitive development of a intellectually disabled child is a slower progress in passing through the various cognitive stages and overall lower values of general development.

2. Due to personal passiveness and lack of concern from the early stages of development, mild and moderate intellectually disabled children commence additional lagging behind because of insufficient stimulation and poor interaction with environment. Their development stages are stretched in time and every consecutive is longer, until development stops.
3. Individuals of absolute norm demonstrate results corresponding to their calendar age.
4. For individuals who are intellectually disabled, the calendar age does not correspond to the mental age.
5. For individuals who are moderately intellectually disabled, their stage levels are even worse than those who are mildly intellectually disabled, due to heavier mental deficiencies.

The experiments developed in this article prove that from point of view of Piaget's theory, the cognition development of an intellectually disabiled child displays slower progress passing the various cognition stages and with lower values of overall development.

The demonstrated experiments allow every teacher to repeat Piaget's experiments and find out at what stage the student is.

The model offered would allow the general teacher as well as the school personality development team to easily orient themselves with the capabilities of a SEN student to develop individual programs adequate to the student's progress.

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