

**Nursery Education
as a Goal-directed Activity**

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Nursery Education as a Goal-directed Activity _____

Nursery education is regarded, here, as a goal-directed activity. Teacher's educational goals of a lesson are transformed to interrelated tasks, each of which consists of three phases, arrangement, accomplishment, and finish. These three phases can be repeated recursively. Using this formal representations, I analyzed two lessons. One was about rhythmical play of 4-, and 5-year-olds, done by an experienced teacher and the other about finger painting of 3-year-olds by an inexperienced teacher. The results showed that the former lesson was structured better in a number of points than the latter. The formalism adopted here seems to be worth a further application.

Every social action is regarded as a part of a series of actions planned to achieve a goal (Schank & Abelson, 1977). In particular, most of the activities in nursery, or early childhood education are planned and performed to achieve various goals. In nursery education, these goals are mainly set by teachers, based on the goals of the curriculum. Various activities in nursery education realize these goals. Therefore, in order to improve nursery education, we should examine such issues as whether the goals in the curriculum are adequate, whether specific goals in each activity well correspond to the goals in the curriculum, whether activities are well planned to realize each specific goal, and whether those planned activities are in fact performed adequately.

To examine those issues, I shall demonstrate a formal method to analyze the activities in nursery education. Through such an analysis, I will abstract some general principles which nursery education as a goal-directed activity possesses.

Dore, Gearhart & Newman (1978) suggest an idea of a *task* for the analysis of the activities in nursery education. A task organizes and guides children's behavior to have children act towards teacher's goals. A teacher plans tasks to achieve the goals of the curriculum. The teacher's planning involves, on the one hand, the choice and integration of various components (e.g., participants, procedure, setting, etc.), and, on the other hand, the temporal organization which segments a task into three phases, i.e., arrangement, accomplishment, and finish.

I will extend the task concept of Dore et al. and elaborate especially the aspects of hierarchical and sequential organizations. In terms of that perspective, I will analyze some teaching situations in nursery education and consider its implications.

It is convenient for analysis if we assume one continuous dimension among others about the activities in Japanese nursery

education (Early Childhood Education Association of Japan, 1979). There is the "group lesson" on one pole of the dimension, which emphasizes group activity and training of skills. There is the "free education" on the other pole, which attaches much importance to a child-initiated free play. Some nursery schools stand on either pole, but most nursery schools think that both are necessary and incorporate both rather on an *ad hoc* basis.

In this paper, I will analyze the group lesson, because it may be easier there to examine the organization of the activities based on teacher's goals. I will extend the analysis on the same line to the child-initiated education in a further research.

Now then, I shall analyze and show the principles of the group lesson, based on the extension of the task concept above.

1) A teacher sets the goals of the curriculum. To achieve these goals, she divides them into subgoals which are the means for the major goals.

2) A teacher plans tasks to achieve major- and sub-goals in the curriculum.

3) The planning of tasks has two aspects of components and a sequential flow. Components include participants (Who), place (Where), material (With What), frequency (How Many), quantity (How much), method (How), content of activity (What), and reason (Why). Sequential flow consists of three phases. The first one is the *arrangement* phase, where a teacher presents goals of the task to children and prepares for the activity. The second is the *accomplishment* phase, where children perform the activity. The third is the *finish* phase, where a teacher informs children of the end of the activity and, further, evaluates the children's activity and feedbacks to them in terms of what is done in the second phase, whether the goals are achieved, and which parts of the children's activity are especially relevant to the goals.

These three phases are repeated sequentially. So, for example, it is possible that goals of a task may be modified and divided into

smaller ones, based on the evaluation in the third phase of the task before. It is also important to consider the connections among the specific goals of tasks.

The three phases are structured hierarchically, too. It is quite important to be able to repeat them recursively. Therefore, there may be three more phases on levels lower than the arrangement phase, the accomplishment phase, or the finish phase. In such a case, the characteristics of an upper level are shared by or inherited by a lower level.

4) A task is a psychologically real unit, which is recognized and shared by both teacher and children.

5) All the components are not necessarily marked explicitly in a linguistic way. Rather it is usual that components which are implicitly presupposed to exist are not stated.

6) Both goals and tasks are complexly structured. But, when education achieves its purpose and is done well, there must be a good correspondence between goals and tasks.

7) Which parts of the sequential flow are complexly organized will differ, depending on the contents of the task. For example, when a teacher gives a model to children, the arrangement phase must be complex. When children discuss the activity just done responding to teacher's request, the finish phase must be complex.

I will analyze some teaching situations in nursery education in terms of the above principles. In particular, I shall compare one case of education by an experienced teacher with another case by an inexperienced teacher, and then show how the former is superior to the latter through structured analyses. Of course, as I will describe soon, those two cases are so different in children's age and contents of activities that we need to take account of these differences, too.

[Case 1] teacher — experience of ten years. children's age — 4:2-6:1. number of children — in a younger group 8, in older groups 14. content of activity — rhythmical play including skipping.

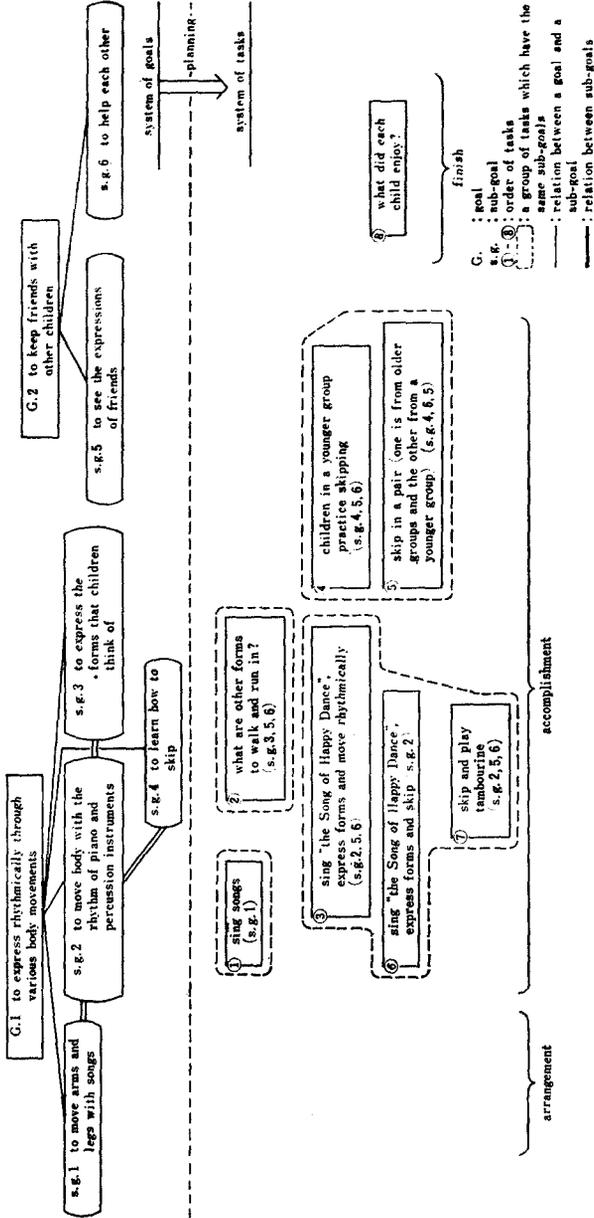


Fig. 1 The structure of goals and tasks in Case 1 (rhythmical play)

- ① sing songs
- { ar.: what (sing)
 - ac.: - { ar.: with what (the Song of Castanet)
 - ac.: ©
 - { ar.: with what (the Song of Drum)
 - ac.: - { ar.: [(1)] (2)how (on the floor)
 - ac.: (1)© (2)©
 - f.: (1)(good) (2)(good)
 - { ar.: with what (the Song of Happy Dance)
 - ac.: - { ar.: (1)how (standing) (2)how (walking)
 - ac.: (1)© (2)©
 - f.: (2)appraisal
- ② what are other forms?
- { ar.: what (what are other forms?)
 - with what (the Song of Happy Dance)
 - who (group)
 - ac.: © (discuss)
 - f. - { ar.: what (say the conclusion)
 - how (sit down)
 - ac.: - { ar.: who(1)△ (2)○(3)□ : © what (say "what was your conclusion?")
 - ac.: © (answer) (1)-(3) : © (say "what was...?")
 - f.: (1)-(3)
 - f. - { ar.: with what (1) (2) (3)
 - [who (all ©)]
 - ac.: © (answer) (1)-(3)
- ③ sing the Song of Happy Dance, express forms and move rhythmically
- { ar.: what (sing, jump, and dance)
 - with what (the Song of Happy Dance)
 - where (whole classroom)
 - how (expressing forms and moving around)
 - ac.: - { ar.: who(1)△ (2)○ (3)□ : © what (beat time with the hand and sing)
 - ac.: © (1)-(3) : ©
 - f. - { appraisal(1)-(3)- { ar.: what (Were they good?
 - What forms were they expressing?)
 - who (©)
 - ac.: ©
 - f.: nodding
 - thanks (1)-(3)

Fig. 2 The structure within each task in Case 1 (rhythmical play)

- ④ children in younger class practice skipping
- ar.: what (practice) ; ① why (the reason of younger children's practice)
 - with what (skip)
 - where (here, in a line)
 - how - { ar.: how (the demonstration of the children's skipping and teacher's model)
 - other (encourage)
 - ac.: - { ar.: how(1)(analytically) (2)(wholistically)
 - { ac.: ① (1) (2)
 - who (younger ①)
 - ac.: - { ar.: (1)-(2)where (here) (3)other (speed) ; ① (beat hands)
 - (4)where
 - { ac.: ①(1)-(4) ; ①
 - f. : (3)appraisal to individual
 - f. : thanks

- ⑤ skip in a pair
- ar.: what (skip)
 - where (round and round)
 - who (one from elder groups and the other from a younger group)
 - other (in turn)
 - ac.: - { ar.: who(1)-(16) ; ①(beat time with hands)
 - { ac.: ① (1)-(16)
 - f. : thanks(1)-(16)
 - f. : (Each child in a younger group skip around twice)

- ⑥ sing the Song of Happy Dance, express forms and skip
- ar.: what (skip, sing, and jump)
 - with what (the Song of Happy Dance)
 - where (whole classroom)
 - how (expressing forms)
 - who (all ①)
 - other (piano and whistle)
 - ac.: - { ar.: (1)-(2) re-how (expressing forms) *
 - { ac.: ①(1) (2)
 - f. : (1)appraisal (2)(good)
 - * "re" means rearrangement of the same content of components.

Fig. 2 (continued)

⑦ skip and play tambourine

- ar.: what (skip, play)
 - with what-
 - ar.: what (What is this?)
 - ac.: © answer (tambourine)
 - f.:
 - other (record, whistle)
 - how (what to tap on)-
 - ar.: what (What can you tap on with tambourine?)
 - other (sit down, place hands on the knees)
 - ac.: © answer
 - f.: repetition
 - appraisal (teacher shows the places to tap on easily)
- ac.: -
 - ar.: who(1)△ (2)○ (3)□ : © what (look, encourage)
 - ac.: © (1)-(3)
 - f.:(1)-(3)-
 - ar.: what (What did © tap on?)
 - who (©)
 - ac.: © answer
 - f.:
- f.:-
 - ar.: what (put tambourine away)
 - who (© in younger class)
 - ac.: ©
 - f.:(accomodate how to put away)

⑧ what did each child enjoy?

- ar.: what (What did © enjoy?)
- how (how to sit down, close eyes)
- who (each)
- ac.: © (think)
- f.:-
 - ar.: what (say what © enjoyed)
 - how (open eyes)
 - other (in turn)
 - ac.: -
 - ar.: who(1)-(21)
 - ac.: © (1)-(21) (answer)
 - f.:(1)-(21)

①-⑧ : order of tasks

(1)-(16) : repetition

© : child (children) says or does

○ : other children as observers

△○□ : groups of children

[] : this item was not mentioned explicitly

ar. : arrangement

ac. : accomplishment

f. : finish

Fig. 2 (continued)

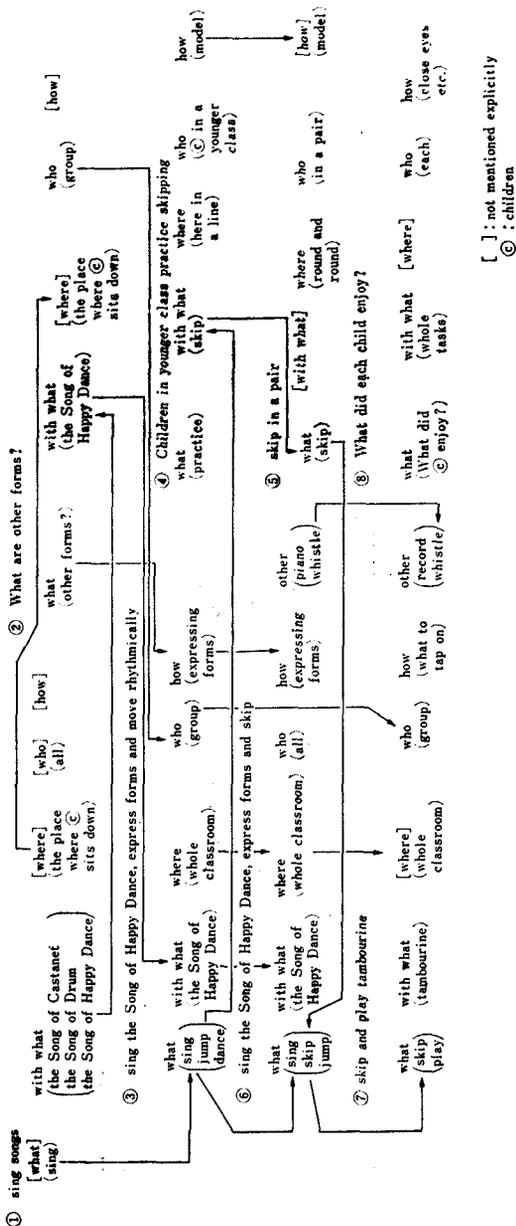


Fig. 3 The relations among components of task-arrangement in Case 1 (rhythmical play)

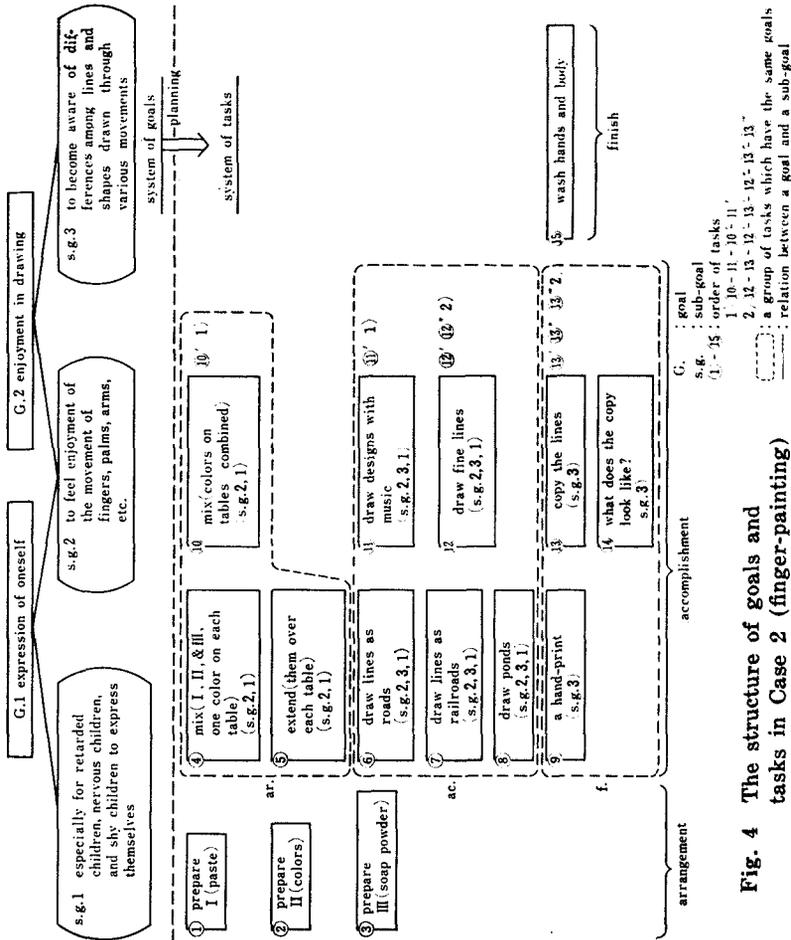


Fig. 4 The structure of goals and tasks in Case 2 (finger-painting)

① prepare I (paste)

{ ar.: what (pour)
 with what- { ar.: what (What is this?)
 { ac.: © answer (paste)
 f. : (yes)
 comment (It's warm.)
 other (look at me)
 ac.: - { ar.: who(1)A (2)B (3)C
 { ac.: (1)-(3) (Ⓟ pours paste)
 f. : (1)(put) (2)-(3)(a lot of)

② prepare II (colors)

{ ar.: what (put)
 with what (color paint)
 ac.: - { ar.: who (A)
 with what- { ar.: what (What color is this?)
 { ac.: © answer (yellow)
 how much - { ar.: what (How much paste do you want?)
 { ac.: © answer (more)
 f. : (more)
 ac.: (Ⓟ puts yellow paint)
 f. :
 - { ar.: who (B)
 ac.: (another Ⓟ puts blue paint)
 { ar.: who (C)
 with what- { [ar.] : (Ⓟ goes to the table of C)
 { ac.: © (pink)
 f. : (yes)
 - how much - { ar. : what (How much paint do you want?)
 { ac.: © answer (much)
 f. : (much)
 ac.: (Ⓟ puts pink paint)
 f. : - { ar.: what (Have you already had paint?)
 { ac.: © (yes)

③ prepare III (soap powder)

{ ar.: what (put)
 with what- { [ar.] : (Ⓟ has a box of soap powder)
 { ac. : ©(soap powder)
 f. : (yes)
 why (soap powder makes it easy to wash clothes)
 ac.: -ac.: (Ⓟ puts soap powder)

Fig. 5 The structure within each task in Case 2 (finger-painting)

{ ar.: who ar.: (T goes to the table of B)
 ac.: C (To us!)
 f.: (Yes, B)
 ac.: (T puts soap powder)
 { ar.: who C (To us!)
 how much ar.: what C (more and more)
 ac.: T (says "Too much soap makes lather")
 ac.: (T puts soap powder)
 f.: C (Yeah!)

④ mix the paste, the color and the soap powder

{ ar.: what (mix)
 with what (paste, color paint, soap powder)
 how (with both hands, round and round)
 ac.: C
 f.: (fine)

⑤ extend them over each table

{ ar.: what (extend)
 where (over each table)
 ac.: - { ar.: how (slap slap)
 ac.: C
 - { ar.: how (tap tap)
 where (here)
 ac.: C
 - { ar.: how (softly)
 ac.: C
 f.: (feel nice, accomplished)
 - { ar.: how (smoothly)
 ac.: C
 f.: (look like waves)
 f.: - { ac.: what C (green)
 f.: T (green)
 - { ar.: what (Have you extended the materials?)
 ac.: C (yes)
 f.:
 - { ar.: what (Have you already accomplished?)
 ac.: C (yes)
 ac.: - { ac.: C
 f.: (slap slap)

Fig. 5 (continued)

⑥ draw lines as roads

{	ar.: what-	{	ac.:-	{	ar.: what (Did a car come?)
					who (B)
					ac.: © (yes)
					f. : (a car came in B)
					ar.: what (What came?)
}	-	{	ac.:-	{	who (A)
					ac.: © (bike)
					f. : (Let's draw lines as roads)
					ar.: what (What do you want to draw?)
					who (C)
}	}	ac.:-	{	{	ac.: © (car)
					f. :

ac. : ac.: © (A car ran against another car)
f. : repetition

{	re-ar.:	{	ac. :	{	what (cars run)
					who (all ©)
					©
					Ⓜ says (bun bun)
					f. : -(Cars came to B)
}	-	{	ac.:	{	ar.: what (What has run?)
					who (C)
					ac.: ©
					©
					Ⓜ says (bun bun)

⑦ draw lines as railroads

{	ar.: what-	{	ac.:-	{	ar.: what (What came?)
					ac.: © (train)
					f. : (train)
					f. : (Let's draw lines as railroads)
					ar.: how (shu shu po po)
}	-	{	ac.:	{	©
					ar.: how (slowly)
					ac.: ©
					ar.: how (going around the table)
					ac.: ©
}	-	{	ac.:	{	ar.: how (rapidly)
					ac.: ©
					f. :- ar.: what (Have you already accomplished?)
}	-	{	ac.:	{	ar.: what (at terminal)
					ac.: ©

Fig. 5 (continued)

⑧ draw ponds

{ ar.: what (draw ponds)
ac.: ©

⑨ a hand print

{ ar.: what (a hand print)
with what (paper)
(hands with paste) - { ar.: what (look at)
with what (hands)
who (all)
ac.: ©
f.: (Oh!)
how (slap)
where (at the windows) - { ar.: what (go)
ac.: ©
ac.: - { ar.: how (slap)
ac.: ©
- { ar.: with what (another side of hand)
ac.: ©

⑩ mix (colors)

{ ar.: where - { ar.: what (come to around the tables)
ac.: ©
what (mix)
how - { ac.: (Ⓜ has mixed a little)
f.: (How nice!)
with what - { ar.: why (because paste is left over)
what (pour)
with what (paste)
ac.: (Ⓜ pours paste)
- { ac.: (Ⓜ put color paint)
f.: - { ar.: what (What color is this?)
ac.: © (green)
f.: (yes)
- { ar.: what (put soap powder)
with what (soap powder)
ac.: (Ⓜ puts soap powder)
ac.: ©
f.: (Finished?)

Fig. 5 (continued)

- ⑪ draw designs with music
- { ar.: what (draw pretty designs)
 - how (with piano)
 - { ac.: - { ar.: where (go around)
 - { ac.: © (draw but not go around)
 - { ar.: where (be still, in one's place)
 - { ac.: ©
 - { ar.: how (forwards)
 - { ac.: ©
 - { ar.: where (go around)
 - how (slowly)
 - { ac.: ©
 - f. :
 - { ar.: how (forwards)
 - { ac.: ©
 - f. : - { ar.: what (Have your hands stretched forwards?)
 - { ac.: © (not yet)
 - f. : - { ar.: who (children around here)
 - how (forwards)
 - { ac.: ©
 - { ar.: how (hand-forms like playing janken)
 - what (draw rivers)
 - where (go around)
 - { ac.: ©
 - { ar.: where (go around to the opposite direction)
 - how (with piano)
 - { ac.: © (draw but not go around)
- ⑩' mix (colors)
- { ar.: what (mix)
 - who (some children)
 - how (stretch hands forwards)
 - why (Some paste has not been mixed)
 - { ac.: ©
- ⑪' ac.: © draw and ⑩ plays piano
- ⑫ draw fine lines
- { ar.: what (draw fine lines) - { ar.: what (look at this)
 - { ac.: ©
 - f. : (Kei has drawn fine lines)
 - how (with finger flexed)
 - where (in one's place)

Fig. 5 (continued)

{ ac.:
f.: (Have you drawn fine lines?)

⑬ copy the lines

{ ar.: what (copy the lines as if taking pictures)
with what (paper)

{ ac.: - { ar.: who (D)
how (saying, "Jii kacha")
ac.: (Ⓟ copies)
f.: -(fine lines)

- { ar.: what - { ar.: what (What should I do about this
copy?)
ac.: © (there)
f.: (stick)
with what - { ar.: what (There is nothing to stick
the copy with)
ac.: © (cellophane tape)
f.: (look for it)
ac.: (Ⓟ sticks)

⑭'

{ ar.: what (draw fine lines)

{ ac.: ©

{ f.: - { ar.: what (Who has already drawn?)
ac.: © (here)
f.: (here)

⑬'

[ac.]: - { ar.: who - { ar.: what (Where?)
ac.: © (here)
f.: (A)

with what (paper)
how (saying, "Jii kacha")

ac.: (Ⓟ copies)
f.: © (accomplished)

- { ar.: what (What does this look like?)
ac.: © (tape)
f.: (tape)

- { ar.: what (What should I do?)
ac.: (Ⓟ cellophane tape)
f.: (Ⓟ sticks)

⑭''

{ ar.: how (like this)

{ ac.: ©

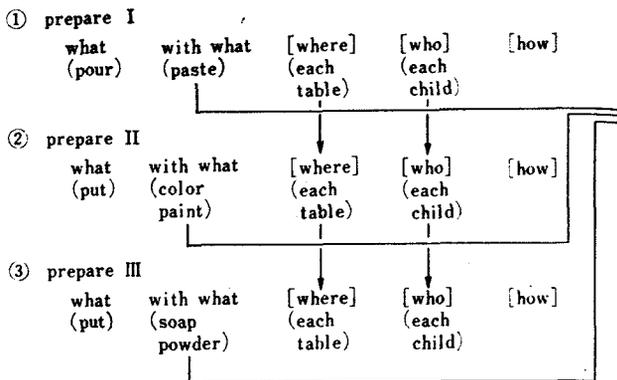
Fig. 5 (continued)

{ ar.: with what (third copy)
 - { ac.: ©
 f. :
 { ar.: with what (last)
 - { ac.: ©
 f. :
 f. : (Let's exhibit them for a while)

⑮ wash hands and body
 { ar.: why- { ar.: what (look at hands)
 { ac.: ©
 { f. : (dirty)
 what (wash)
 how- { ar.: what (take off clothes)
 { ac.: ©
 { f. :
 where (in a bath-room)
 who (a child who has taken off clothes)
 ac.: ©

①-⑮ : order of tasks
 (1)-(3) : repetition
 © : child (children) says or does
 ① or blank : teacher says or does
 A-D : groups of children
 ar. : arrangement
 ac. : accomplishment
 f. : finish

Fig. 5 (continued)



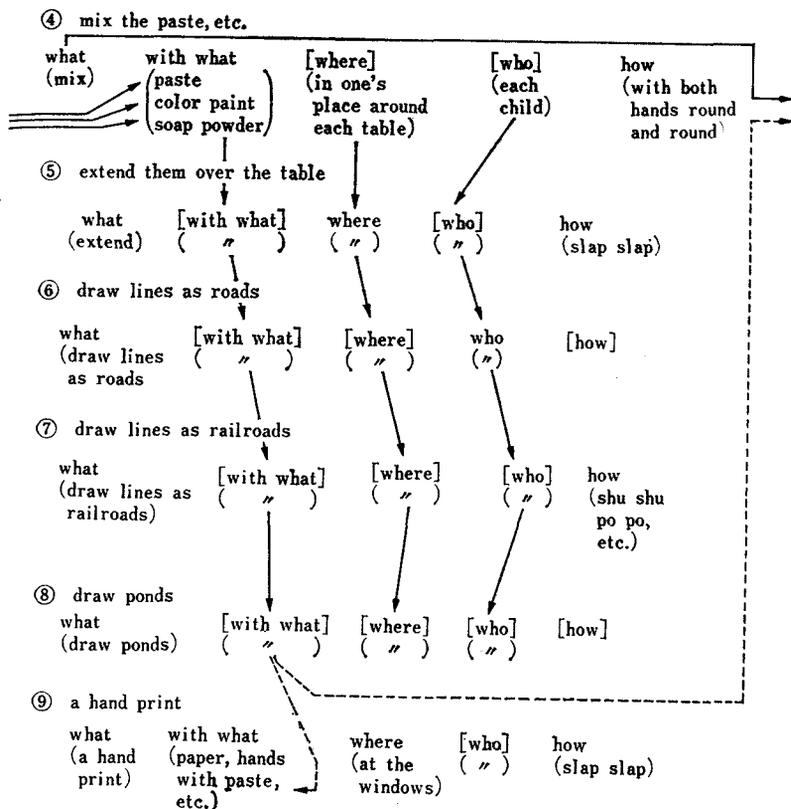
[] : not mentioned explicitly
 ---> : the relation is partial

Fig. 6 The relations among components of

length of time — 55 minutes.

[Case 2] teacher — experience of one year. children's age — 3:3-4:2. number of children — 15. content of activity — finger painting (mix coloring materials with hands, draw lines on them, and copy the drawing on a paper). length of time — 50 minutes.

These activities were videotaped. All the words and major gestures of teachers and children were transcribed. (It took about 8 hours to transcribe each case.) The lessons were, then, structured from the transcripts, according to the above principles. Overall



task-arrangements in Case 2 (finger-painting)

goals on these lessons were gained from teachers' reports.

The results are shown in Figures 1-6. Fig. 1 shows goals, tasks and their connections in Case 1 (rhythmical play). In this rhythmical play, there are two major goals, one of which (Goal 1) is the more important. These two goals are quite compatible. Each goal is divided into subgoals. The task system is, on the whole, segmented into arrangement, accomplishment and finish phases, though the arrangement phase is not expressed verbally. The accomplishment phase is further divided into seven tasks (task

⑩ mix colors (⑩')

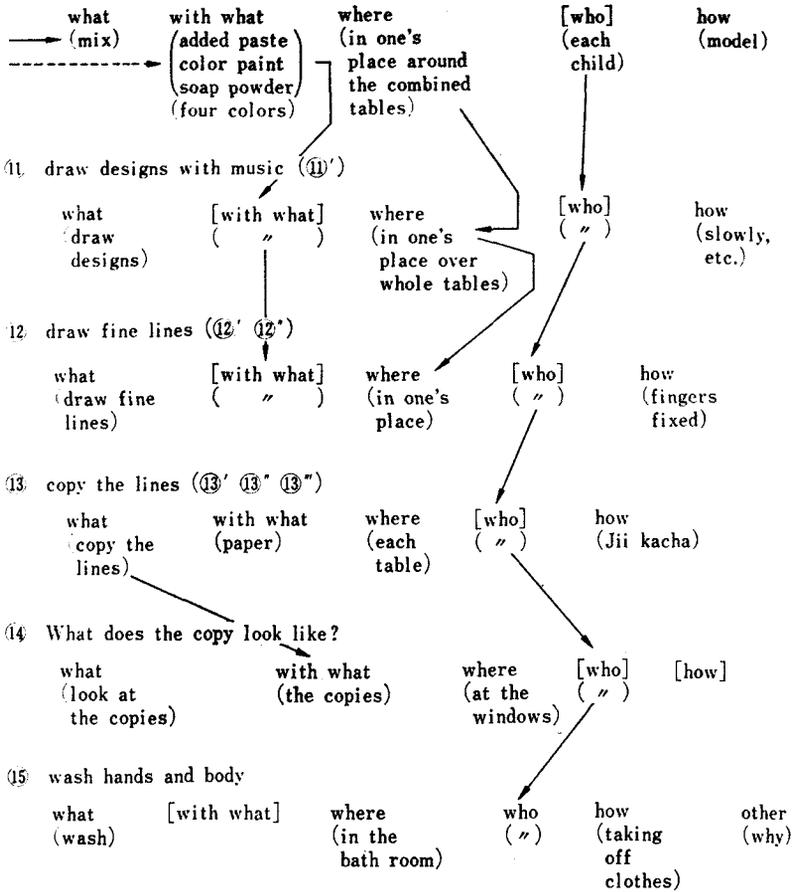


Fig. 6 (continued)

①~⑦). There is one task in the finish phase (task ③). The figure also indicates which subgoals are connected with each task.

Fig. 2 shows the structure of each task. We can see which components are used or expressed in arrangement phases. Arrangement or finish phases are lacking in a few tasks (in task ①, ③, ⑥). The fact that three phases have recursive structures and are

hierarchically organized is well schematized.

Fig. 3 shows the correspondence among the components of the arrangement in each task. This indicates how adequately the former task prepares for the next task.

The results of the analyses of Case 2 (finger painting) are shown in Figures 4-6. Fig. 4 shows goals, tasks, and their connections. There are two major goals with equal status. Each is divided into subgoals. But the connection among goals and subgoals is rather loose. Compatibility among these goals (e.g., subgoal 2 vs. subgoal 3) is not clear. The task system is, on the whole, segmented into arrangement, accomplishment, and finish. The accomplishment phase is further segmented into arrangement, accomplishment, and finish. Under the overall arrangement there are three tasks (task ①-③). Then, under the arrangement in the overall accomplishment there are three tasks (task ④, ⑤, ⑥), under the accomplishment there are five (task ⑦, ⑧, ⑨, ⑩, ⑪), and under the finish three (task ⑫, ⑬, ⑭). Lastly, there is one task in the overall finish (task ⑮). In each task relevant subgoals are indicated.

Fig. 5 shows the structure of each task. Comparing them with those of Case 1 (Fig. 1), the structures of Case 2 are rather extended. Many arrangements and finishes are lacking (arrangements: in task ②, ③, ⑤, ⑥, finish: in task ①, ②, ③, ⑥, ⑦, ⑧, ⑩, ⑪). Sometimes an arrangement is repeated (re-arrangement) (in task ⑥). On the whole, the structures are distorted.

Fig. 6 shows the correspondence among the components of the arrangement in each task. Comparing it with that of Case 1 (Fig. 3), connections are sometimes unclear, and correspondences are not so good especially in the explicitly stated components. The content of one component is in conflict within itself (in component "where" in task ⑩). The details of the component are shown in Fig. 5. The teacher instructed the children at one time to go around, and at another to be still, in one's place, which confused them.

Now let us see the summary table (Table 1) and consider the

Table 1 The summary comparison between two lessons

	Case 1	Case 2
teacher's experience (years)	10	1
children: range of age	4:2-6:1	3:3-4:2
children: number	younger 8 older 14	15
content of activity	rhythmical play including skipping	finger painting
length of time (minutes)	55	50
<hr/>		
〈Degree of elaboration in each level〉		
<hr/>		
in the 1st level		
number of tasks	8	15 +7*
number of the sets of phases	8	25
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in the 2nd level		
number of the sets of phases	36 (100)	53 (100)
elaborating { ar. ph. } ac. ph. } f. ph. } in 1st level	3 (8)	13 (25)
	30 (83)	34 (64)
	3 (8)	6 (11)
mean number of the sets per task	4.5	2.4
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in the 3rd level		
number of the sets of phases	39 (100)	21 (100)
elaborating { ar. ph. } ac. ph. } f. ph. } in 1st level	2 (5)	6 (29)
	7 (18)	15 (71)
	30 (77)	0 (0)
mean number of the sets per task	4.9	1.0
elaborating { ar. ph. } ac. ph. } f. ph. } in 2nd level	0 (0)	7 (33)
	30 (77)	4 (19)
	9 (23)	10 (48)
mean number of the sets per set of 2nd level	1.1	.4
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in the 4th level		
number of the sets of phases	0	3
elaborating { ar. ph. } ac. ph. } f. ph. } in 3rd level	0	2
	0	0
	0	1

ar. ph. : arrangement phase

ac. ph. : accomplishment phase

f. ph. : finish phase

() : %

* : number of the repetition of the same task

trends.

1) (A task is defined by "what to do" in the component. But we should also take account of the order. That is, if the same "what" is divided by some other "what", then these two are regarded as two separate tasks.)

Case 2 has more tasks than Case 1. There are at least two reasons. First, the same kinds of tasks are repeated separately in Case 2. (For example, in tasks ②-③, all the groups draw, group A copies the lines, all the groups draw, and then group B copies the lines.) Second, in the tasks ① (prepare paste), ② (prepare colors), and ③ (prepare soap powder) of Case 2, preparation of materials for finger painting is segmented according to each material, without presenting any overall view to the children. The time span of a task is short for children of Case 2. The shortness derives from either the inexperience of the Case 2 teacher, or the younger age of the children, or both.

2) (A set of phases is defined as the sequence of arrangement, accomplishment, and finish in this order, including one which lacks one or two phases. It is typically equal to a task.)

In Case 1, the number of tasks is the same as that of sets. But in Case 2, there are three more sets than tasks. In one of them rearrangement is done to emphasize that all the children should take part. In two sets, the children continue the process in spite of the teacher's announcement that the task is finished. It may be possible that the task arrangement by the teacher has not been well understood by the children.

3) (Elaboration is defined as increasing the domain which is dominated by an upper phase.)

The degree of elaboration in the 2nd level per task is higher in Case 1 than in Case 2. In Case 1, accomplishment is more elaborated

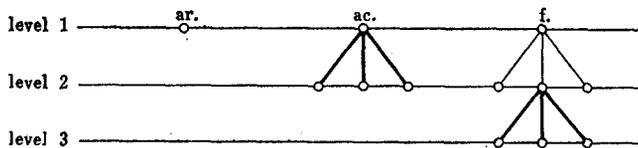
than the arrangement or finish. This indicates that the teacher unilaterally organizes and presents tasks to the children. On the other hand, arrangement is more elaborated in Case 2 than in Case 1. This reflects the Case 2 teacher's efforts to pick up children's expressions and arrange tasks from them.

4) Case 1 is more elaborated per task in the 3rd level, too. Particularly the finish is much elaborated. Task ⑧ includes twenty-one sets in the 3rd level where the teacher makes the children think individually about what they enjoy and answer. This seems to be adequate as an overall finish because the task is the last one in the lesson and the teacher makes the elaborative relation clear by stating that she will ask the children in turn before getting each child to answer.

5) The accomplishment of the 2nd level of Case 1 is more elaborated than the other two phases. This corresponds to the fact that in Case 1, the children actually practice the accomplishment throughout the lesson. The typical pattern of elaboration in Case 1 shown in the following figure (Fig. 7) indicates it. In sets of bottom lines, children almost always practice only the accomplishment phase.

6) There is no elaboration into 4th level in Case 1. In Case 2,

CASE 1



(A bold line indicates much elaboration. A fine line indicates less elaboration.)

Fig. 7 Relations among levels in Case 1.

elaboration into the 4th level is done three times. This seems to elaborate rather minor details. Let us see the correspondence to the task goal.

CASE 2 task goal: "copy the lines"
 4th level: "where to stick the copy"
 "how to stick the copy"

These only extend the arrangement phase of the 1st level. Correspondence to the task goal is rather indirect here.

The results of detailed analyses of the structures of the activities are summarized as follows.

1) structures of goals. In Case 1, goals are well organized. In Case 2, goals are set in a row and not well organized.

2) structures of tasks. In Case 1, the task structure reflects the goal structure. The correspondence between the task structure and the goal structure is clear. In Case 2, the correspondence between the task and goal structures is not clear.

3) arrangement phase. In Case 1, the components of the arrangement in each task are well connected with the components of other tasks. That indicates that structuring of all the tasks is tight and good. The teacher always does the arrangement, which is a characteristic of teacher-initiated activity. In Case 2, the teacher often picks up what children say and do to make use of them. This reveals her effort to respect the initiative of the children. But the arrangement sometimes fails, and rearrangement is needed. Arrangement may be lacking. The order of three phases is violated in a few tasks.

4) accomplishment phase. In Case 1, the children do all the work. They are variously organized, with all the members, in each group, in a pair or individually. The teacher always instructs the children who observe the other children (it corresponds to subgoal 5). In Case 2, the children do the same activity individually (the exception is "taking pictures"). But, the teacher often performs the

substantial parts (she pastes, puts in, copies etc.). She always takes care of one retarded child (it corresponds to subgoal 1), but does not succeed.

5) finish phase. In Case 1, even when finish is lacking on an upper level, it is retained on a lower level. The teacher might consider tasks on a lower level than analyzed here. When children act individually, the teacher evaluates the performance of each child. In Case 2, the finish may be lacking on every level. There are three possible reasons. First, as the arrangement is not made clearly, children do not perform the activity well and then the teacher changes the content of the activity. Second, as the main content of the activity is finger painting, children almost always keep drawing, even when the teacher tries to arrange or make feedback. Third, the teacher might emphasize the overall flow on an upper level. The lack of a finish may reveal the continuity through the tasks. But both of these latter two reasons do not justify the lack of the finish phase. They only indicate the difficulty of the finish in this setting

The contrast between Case 1 and 2 suggests that Case 1 is well organized but that the structure of Case 2 is distorted in many respects. Of course, Case 2 treated younger children than Case 1, and the content of the activity in Case 2 is more individualistic, more continuous, and less segmentable than that of Case 1. Those factors are certainly effective. But to explain the above results, we had better conclude that the difference of teachers' planning and its realizing skills due to teaching experiences is also effective. To clarify how large these effects are needs further research.

From the analyses above, I tentatively conclude as follows.

- 1) Nursery education is a purposeful activity planned according to the goals of teachers. The activity is complex but orderly.
- 2) An experienced teacher constructs a clearer, more consistent, and more elaborated task structure.

- 3) Through these structural analyses based on a formal representation, we can examine the quality of nursery education and its possibilities of improvement.
- 4) We can compare many practices of nursery education owing to the content-free formalism.
- 5) I will further analyze other types of nursery education, especially child-initiated education. It must also be goal-directed, but have a rather different character. In particular, it is important to examine discrepancies between goals and plans of teachers and those of children and their ways of negotiation to adjust these discrepancies.

NOTES

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