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Active participation in the life of a social group in everyday school life: citizenship in mathematics lessons

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Introduction

Recent studies show that attitudes of passivity seem to be dominant in Polish society, and that this may be a major barrier to stimulating civic behaviour. This situation may be a consequence of the radical social, political and economic transformations that have taken place in Poland over the last decade. The Poles feel lost when confronted with political pluralism and democracy. The protective role of the state, considered natural in Poland since the Second World War, contributed to the development of a sense of security and social equality, but also made it impossible for individuals to manifest their social activity or take responsibility for their decisions (Obuchowski, 2000; Czapinski, 1992). It follows that one of our most important educational tasks now should be to promote widely understood citizen subjectivity, reflected by the way of thinking, hierarchy of values, beliefs, attitudes and patterns of social and civic behaviours.

Teachers and educators responsible for the development of civic competences and social activity among their pupils or students usually focus on disseminating formal knowledge and transmitting information during civic/citizenship education lessons, which is a separate subject in Polish schools. Sometimes interpersonal and social competences are developed further through extra classes or workshops, with the help and support of psychologists, therapists, etc. Such initiatives are certainly necessary and valuable, but the knowledge acquired in this way may appear too hermetic and theoretical to pupils when contrasted with real-life situations. For instance, during civic education lessons children are taught how to make democratic decisions and respect the different views or opinions expressed by others, but in a Polish lesson they will be simply given the 'correct' interpretation of a literary work, and required to accept it as the only possibility if they want to pass the test. In intercultural education lessons, pupils learn that they should be tolerant towards those from other cultures or religions. Although they are taught to be open and supportive in their contacts with children from other countries, pupils may often be unable to respect the different opinions, views or ideas of their classmates. This suggests that civic education should not be aimed at only discussing large-scale events and phenomena such as cultural distinctness, elections, political systems, and so on: its key element should be promoting 'social activity in everyday life'. This kind of education can be provided in everyday school life, through lessons in language, science, or mathematics. I made such an attempt a year ago, with a group of primary school pupils aged nine. Examples of this, and its effects on the development of the social activity of pupils are described in this paper.

The paper presents two types of activity-developing tasks, to be performed during mathematics lessons. Analysis of these tasks and observation of the patterns of pupil behaviour during these lessons led to interesting conclusions regarding the promotion of social activity and proactive attitudes.

Social activity of pupils

Social activity can be defined as an attempt to influence the social environment and tasks performed together with other people. 'Socially active' behaviours have a specific structure, which makes such interactions possible. The studies conducted by Gurycka (1970) provided the basis for an analysis of behaviours of a few dozen children functioning in various social situations. This analysis distinguishes twelve patterns of 'active' social behaviours within two categories: relational (connected with social interactions) and task-oriented (connected with performing certain tasks in contact with other people). Each category is discussed briefly below.

Relational category

Interpersonal contact

- direction in contacts with others (a person makes decisions for other pupils, relieves them of their tasks, is dominant)
- encouragement in contacts with others (a person offers help, advice, promotes teamwork)
- expressing protest
- protest without explanation (a person protests against a given concept, task or decision, he/she considers erroneous, but gives no explanation about why they should be rejected)
- protest with explanation (a person protests against a given concept, but always gives his/her personal reasons for rejecting them)

Giving one's consent

- approval (a person clearly voices or shows his/her approval for a given idea, concept or task prior to taking any actions)
- obedience (a person does not comment on ideas, concepts or tasks, shows no approval or disapproval, simply performs his/her duties)

Task-oriented category

Organisation of teamwork

- leadership/management (a person takes the role of a group leader, organises teamwork)
- initiative (a person puts forward proposals concerning teamwork organisation)

Content-related work

- inventiveness (a person comes up with new, creative ideas and effective solutions)
- knowledge (a person shares knowledge, proposes what has already been verified in similar situations)

Performance-realisation

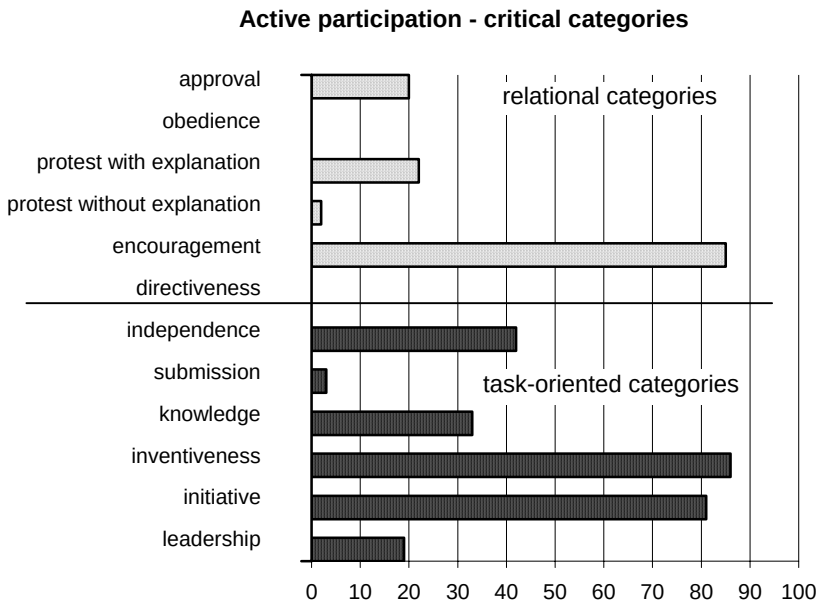
- submission (a person performs tasks according to well-known patterns, participates in teamwork in response to a command, seeks help even in solving small problems)
- independence (a person performs his/her tasks without help, eagerly engages in teamwork without waiting for commands, solves problems on his/her own).

The significance of particular elements of activity and their effects on the social functioning of children are different. My investigations of the social activity of primary school pupils were preceded by determining the activity profile preferred by teachers. I asked 63 primary school teachers to choose, from among the above twelve patterns of behaviour, those four which they consider fundamental to the social activity of their pupils. The results are shown in Figure 1.

Figure 1 shows that teachers prefer that pupils first concentrate on the task, and then on relationships with others. It follows that in their opinion an active child should be inventive, ingenious and encouraging, and that attitudes such as submission, obedience and directiveness are related to activity to a lower degree. It seems that teachers prefer proactive behaviour, enabling pupils to create reality, rather than reactive ones, which are only responses to the requirements of a social environment.

To what extent is proactive behaviour stimulated and promoted at school? One of the objectives of the present study was to answer this question. During the experiment primary school pupils were assigned two tasks: the first was typical of their everyday schoolwork, the other was different, provoking them into displaying social activity.

Figure 1



Social activity of children at school – a case study

Stimulating social activity during mathematics lessons

The social activity of pupils was analysed during two types of mathematics lessons, conducted on two consecutive days. On the first day pupils were asked to solve Task 1, and on the next day Task 2. The tasks were developed according to the following criteria:

Similarities

1. both tasks take the same period of time to be performed
2. both tasks involve analytical thinking and mathematical skills
3. both tasks have a strong social background
4. both tasks involve problem-solving
5. both tasks are to be performed individually and are described on individual worksheets, but the pupils are encouraged to cooperate
6. in the case of both tasks the way of performing them is first discussed and analysed

Differences

1. Task 1 is algorithmic; Task 2 is heuristic
2. Task 2 requires making choices and decisions
3. Task 2 asks pupils are asked to analyse the criteria for their choices, give reasons for their decisions and discuss the consequences.

Task 1 is a typical mathematical problem. Task 2 is a bit different – in addition to analytical thinking and mathematical skills, it involves decision-making and analysis of this process. That is why the tasks are referred to as (1) Non-decision making task, and (2) Decision-making task. Both tasks are presented below.

Task 1 - Non-decision making

(1) You have 40 candies. Three friends have just come to visit you and you would like to share your candies with them. How many candies should each of you be given if you want to make it fair and share them equally?

(2) You had not started eating you candies when another friend joined you. You do not want her to feel uncomfortable. How many candies should each of you give her if you want to make it fair and share them equally?

(3) It seemed impossible to eat all the candies at once, but Kate and Mary are gluttons. They have already eaten all their candies. How many candies have the two of them eaten?

(4) In the evening your Mum enters the room and says: 'Girls, as a reward for being so good and nice, the next time you come each of you will be given two candies more than today. How many candies should Mum buy for the next meeting of the girls?

During each of the above stages six competent evaluators observed pupils' behaviours. They evaluated social activity on an individual basis, taking into account the relational and task-oriented categories. The results of their analyses and observations are given below. The differences in pupils' behaviours during the lessons are discussed first,

followed by an assessment of task performance according to particular categories and spheres of social activity.

Analysis of pupils' behaviours at particular stages of task performance

Stage 1 – Instruction

The pupils generally listened carefully to the instructions, sometimes exchanging comments. They asked detailed questions concerning the tasks. No significant differences were observed in the activity of pupils at this stage for either tasks.

Stage 2 – Task performance

While performing Task 1 (Non decision-making), seven from among 25 pupils made contact with others, usually in order to:

- find whether they were solving the problem correctly
- ask for help in solving the problem
- inform others that someone had solved the problem incorrectly.

Four pupils tried to copy the correct solution from the worksheets of other pupils.

While performing Task 2 (Decision-making), 22 of the 25 pupils contacted others, usually in order to:

- see how they solved the problem
- show their solutions
- assess the solutions of other pupils
- help those who had not competed the task.

No cases of cribbing were observed.

Stage 3 – Assessment

When discussing Task 1 (Non decision-making), the teacher asked pupils how they had solved each part of the problem and why they did it in this way. Nine pupils volunteered to answer her question, and four were chosen to present their solutions. The other pupils mostly listened to them, although several were engaged in some other activity. Two pupils spontaneously commented on the ways of solving the problem and asked questions.

Task 2 - Decision making

The Novak family have decided to visit their parents and grandparents at Easter. They have not seen one another for a long time, so they would like to look elegant, as it would make them feel good. They have looked through their clothing and found that no-one has elegant trousers:

MUM, Agnes – she's an elegant blonde; her trousers are unfashionable

DAD, Andrew – he's a well-built, man; he has only got a pair of old jeans

DAUGHTER, Barbara – 10 years old; she has outgrown her jeans, they are too short

SON, Mark –9 months old and can't walk yet, but he crawls around and his rompers are frayed.

The family decide to go shopping and buy new trousers for everyone. They can spend only PLN 100. They go to a shopping centre and make a list of trousers and their prices. The list is given below.

Look at the prices of trousers and decide for the Novak family which trousers they should buy, and for how much. Remember, you can spend only PLN 100!

Trousers		3rd quality lowest price	2nd quality average price	1st quality highest price
Ladies	Jeans	24	28	33
	Suit trousers	29	32	39
Men and Boys	Jeans	20	25	29
	Suit trousers	28	33	38
Girls	Jeans	16	19	25
	Tracksuit trousers	11	15	19
Infants	Rompers	7	10	15
	Jeans	15	19	23

Criteria of my choices

1. I think Mum should buy trousers of .....quality, for PLN .....,

because.....

[2.,3.,4 - similar analyses concerning the trousers for Dad, Daughter, and Son

During the visit at their parents and grandparents Mum (Dad, Daughter, Son) will feel …….. in her/his trousers because .....

While discussing Task 2 (Decision-making), the teacher again asked pupils how they solved each part of the problem and why they did it in this way. This time 17 children volunteered to answer her question. They presented their solutions and gave reasons for their decisions. The other pupils spontaneously commented on their proposals (21 comments were recorded), saying, for example 'I decided that the little boy should get the cheapest rompers, because he's too small to care about it'; 'I don't agree with you, little children should get the best things, I decided to buy both rompers and shorts for Mark'; 'Why should I spend so much money on a little child, he will soon wear his clothes out anyway, it's better to buy Mum something better for this money, Mum will be glad because Auntie is jealous when she looks pretty'; 'You shouldn't lie to a little child just because he is small and can't talk'; 'Yes, you can lie to him, because little

children wear clothes out, so they should get worse things, it's better to buy Mum something more expensive'.

Stage 4 – Break

During the break after Task 1 (Non decision-making) the pupils did not discuss it. They were engaged in eating, showing their toys to friends, chatting.

During the break after Task 2 (Decision-making) the pupils were involved in similar activities, but 14 of the 25 children talked about the problem they were working on in the lesson.

Analysis of the social activity of pupils during problem solving

Six competent evaluators analysed the activity of 25 pupils within two categories and twelve patterns of behaviour. The activity of each child was analysed by two evaluators, in order to avoid subjective assessments and differences in evaluation criteria. The differences between the evaluators' opinions were not statistically significant. The way that partial assessments had been made by each of the evaluators were summarised and adopted as a final evaluation. The results of evaluation of the activity displayed by children while performing Task 1 (Non decision-making) and Task 2 (Decision-making), averaged for all pupils, are given below.

Figure 2

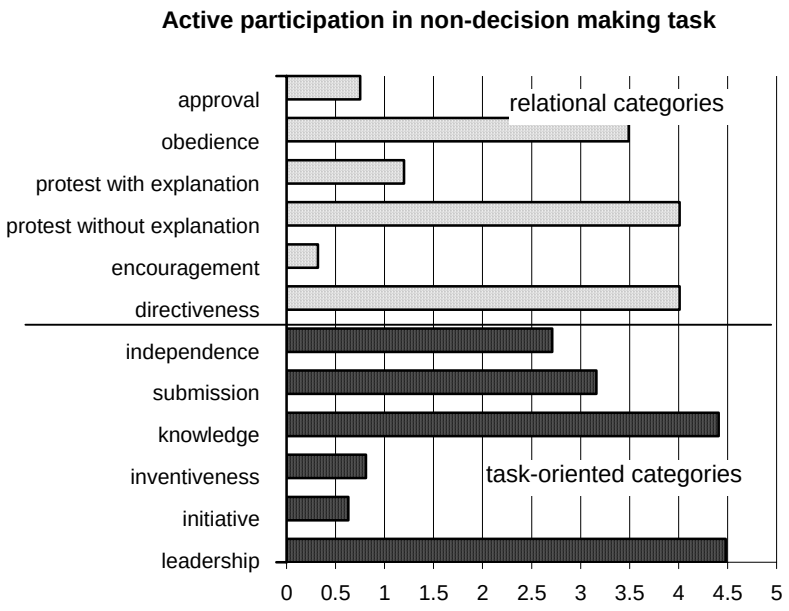
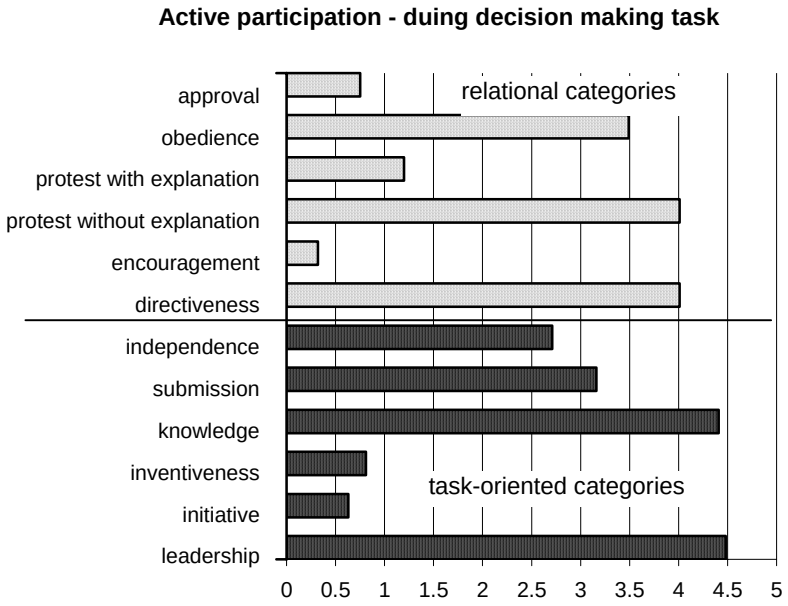


Figure 3 shows that in the case of Task 1 (Non decision-making), pupils concentrated first on organising the work of others and sharing their knowledge. They demonstrated initiative and inventiveness only to a slight degree. They showed directiveness and obedience in relations with others, as well as a tendency towards expressing protest without presenting arguments or explanations.

Task 2 (Decision-making) stimulated other kinds of activity. Pupils displayed initiative and inventiveness. In their contacts with others they expressed consent and always gave their reasons while protesting against some solutions.

Each of the tasks is oriented at activating a different kind of personal potential. The first reveals and strengthens submissive and reactive responses, the second stimulates activity.

Figure 3



Discussion

Despite the fact that teachers understand the importance of promoting proactive behaviour among their pupils, they give them no chance to demonstrate such behaviour during normal everyday lessons. Most of the tasks assigned to children at school, even those which are inspiring and cognition-oriented, promote reactive responses. The changes observed in pupil behaviours during the performance of Task 2 (Decision-making) indicate that the kind of task assigned to pupils and the requirements set by teachers may greatly affect their behaviours and reveal hidden potentials.

When a task aimed at developing mathematical skills is of an heuristic nature and involves decision-making, pupils become more open to suggestions, cooperation and establishing contacts with classmates. Although such a task requires more activity on the part of the children, which gives the impression of chaos and lack of order, all pupils are really engaged in solving the problem. Despite free contacts and increased activity, Task 2 (Decision-making) does not provoke pupils to crib; instead, it makes them share opinions and put forward suggestions. Furthermore, Task 2 makes them concentrate on the consequences of their decisions, and stimulates spontaneous discussions in which children present their own arguments and listen to those put forward by others. The teacher is expected to play the role of moderator in such discussions. He/she is responsible for keeping order, but does not have to encourage pupils to exchange views and opinions, because in such a situation the discussion can go on without any special stimulation. Task 2 allows children personal involvement in the problem-solving procedure, so they also spontaneously manifest their activity outside the classroom.

The objective of civic education should be not only to disseminate formal knowledge but also to promote socially active attitudes. Therefore, we should be aware of the fact that further development of such attitudes depends to a great extent on the experiences gained by children during other lessons. Our experiment shows that proactive responses of younger primary school pupils can be easily suppressed, but can also be strengthened by appropriate modification of school tasks.

References

Czapinski J., (1992), *Psychologia szczęścia*, Poznań, Akademos.

Gurycka (1970*), Dzieci bierne społecznie*, Warszawa, PAN

Obuchowski K., (2000), *Człowiek intencjonalny czyli o tym jak być sobą,* Warszawa, Dom Wydawniczy Rebis.