

DIDACTIC MODELS FOR INTERCULTURAL COMMUNICATION THROUGH GROUP ILL-STRUCTURED PROBLEM SOLVING

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In the paper are presented three didactic models for intercultural communication through group ill-structured problem solving. Models are justified by two general approaches: genealogical and taxonomical. Genealogical approach is used in terms of intercultural communication. The taxonomical approach is conceptualized in conjunction with strategies for ill-structured problem solving.

Interculturality is a social phenomenon with political, ethnic, legal, educational and religious dimensions. It is at the same time a concept, a perspective and an action method. It is typical for real democracies, because its methodological grounds are based on absolute cultural relativism. The utopist idea of society of total cultural agreement comprises the special nature of education as a "passage" to the total unattainable idea of Interculturality. But while interculturality embodied in cultural interaction and mutuality is dynamic, the educational situation is relatively static. Intercultural communication is interfering with this paradox. Intercultural communication expresses the "universal values". It is the essence of all common things in cultures, kind of a mediator in the static-dynamic relationship between the general idea of Interculturality and the education as its exponent.

In search of adequate ways to optimize the intercultural communication in school, this paper focuses on three main objectives:

- to describe the intercultural communication in educational contexts using genealogical approach to interpret it;
- to conceptualize the taxonomic approach for solving ill-structured problems in a multicultural context, based on The theory of reasoned action (TRA), developed by Fishbein and Ajzen (1975), and the concept for cognitive dissonance by Festinger (1957);
- to provide didactical models for intercultural communication through solving group ill-structured problems.

Intercultural communication in educational contexts

The institution of school is called upon to provoke interculturality as a core social need through intercultural communication. Regarding its presence in school, intercultural communication is considered both as a process and as a specific competence – intercultural communicative competence. The relationship between the two aspects of intercultural communication at school can be presented with didactic metaphor: intercultural communication

is a natural methodological element for achieving the education goal – intercultural communicative competence.

As a methodological element intercultural communication should be examined in its two inseparable forms of presence in education – general theoretical and above theoretical, methodological.

In general theoretical interpretation of intercultural communication three of its characteristics are highlighted (Ivanov, 1999):

- It is a "form of relationship between cultures" or a tool of cultural relativism in education;
- It is an expression of the overall philosophy of modern education as multicultural education;
- It is typical for the (post)modern man's appearance, whose main character is diversity. The diversity is presented both as an identity, self determination (sex, race, ethnicity, class, etc.) and a social marker – formation and development of inter-group differences.

In the methodological aspect two main components stand out: First methodological component is the relationship between educational entities as subjects of intercultural communication. In this component the characteristics of the two entities stand out. The teacher is an intellectual, an expert, a cultural worker, who manages or runs without imposing any comments or ideas. He is called to recognize his own ignorance, to be an equal cultural agent and to receive help from students enabling them to study in their full capacity. The teacher has many roles, often referred to be not typical - opponent, competitor, master, network administrator, information selector, partner, trustee, and guardian. The student, in turn, is seeking his own values (life, aesthetic, professional...) and ideals (pluralistic, global, ecological ...). He is on a par with the teacher. Students and teachers are two learning systems in the learning school system. Through interaction with various information sources and social communities the student is self-improving and organizing his own knowledge on a personal level (Giroux, 1990; McGregor, 1992; Beck, 1993).

The second methodological component is of no significance to the subjects of intercultural communication at school. It refers to the social presence of culture and the ways for re-creating levels of cultural development.

Social presence of culture is illustrated by the iceberg metaphor. In the visible part of the iceberg are tangible, visible forms of culture – beauty, art, theater, literature, classical music, folklore, games, food and clothing. Hidden messages in culture are actually many more – the same way as the invisible part of the iceberg is many times bigger than the visible. In the depths of culture are: the ideals of beauty, class division, embarrassment, friendship, health, etc.; body language, social interaction, behavior models, informal relationships, Self-concept, social roles, approaches to problem solving and others (AFS..., 1984). From the methodological point of view it is necessary to re-create the levels of development in culture – more precisely – from element of different cultures to aggregate messages encoded in universal values. Useful is the conception of Hofstede, where these levels are presented concentrically. According to Hofstede symbols are the surface expression of culture while at a deeper level of culture reveals it by features, rituals, values (Hofstede, 1993).

Intercultural communicative competence, as an objective and result of intercultural communication process in school, covers both entities – the teacher and the student. In both cases it is defined as the inseparable subjective quality with cognitive and behavioral components. Regarding the teacher, however, intercultural communicative competence is validated as

specific professional and pedagogical competence of three components: knowledge, skills and attitudes (relations) (Byram, 1997). It also applies to the teachers' management status in aspects of intercultural learning environment. Regarding the student – it is strongly influenced by factors outside the school institution. That is why the formation and management of intercultural communicative competence by teachers in real educational environment is a delicate and less sustainable process.

In summary, for intercultural communication in school should be thought of as a developing, highly customized system, but this development is not necessarily linear and predictable. And this is the reason the genealogical approach to be applied in regard with intercultural communication in school. The most important thing about this approach is the understanding the life path of everything from reality. This path is not smooth and there are important points, points of metamorphoses and transitions to other levels, potential critical points. In the life path of things multiple relationships are possible, beginnings and outcomes as sequels, not as an end.

The specific genealogy of intercultural communication in school environment is presented and usable within the didactic models of intercultural communication through the solving group ill-structured problems.

Ill-structured Problem-Solving in intercultural educational context

In the specialized literature, problem solving is defined as an instrument, skill and process. As a tool it is used to achieve specific objectives and results. As a skill is formed and used throughout life.

The process of problem-solving is of a particular pedagogical interest for several reasons:

- Solving problems is a functional characteristic of thinking and as such it is a prerequisite for cognitive development of students (Anderson, 1987; Jonassen, 1997; Howard & McGee & Shin & Shia, 2001; Minchev, 2008).
- Solving problems is both behavioral and emotional act, making it an important social process (Sternberg, 1996; Prentz & Naples & Sternberg, 2003; Kaloyanova, 2009).
- Structured and systematic problem solving of cognitive and affective level is a prerequisite for the formation of skills for problem solving, defined as the core competence of modern man (The PISA, 2003; The European Framework for Key Competences for Lifelong Learning, 2010).
- Solving problems is determinate cultural process, a sign of deep features of a culture (AFS..., 1984; Sternberg, 1996).

In terms of intercultural communication the importance of solving group ill-structured problems is emphasized. The arguments of the different authors can be summarized in three accents:

- Ill-structured problems content – they are derived from real life, where the data are contradictory. There are no appropriate assumptions or theories, values are in conflict. In order to resemble situations in the real world, ill-structured problems have unclear goals and incomplete information (Simon, 1973; Voss, 1988; Wood, 1993; Jonassen, 1997).
- Strategies for formulating ill-structured problems – in a problematic situation many problems can arise. The most accessible is the formulation of well-structured problems, because conditions clearness suggests the decision algorithm. The challenge is to seek the unconventional, complex to resolve in the situation. From the perspective of cultural differences, the formulation of ill-structured problems in a problematic situation illustrates

the participants' notion of what a problem is; it represents discourse points of view to the categorization of the problem, informs about the dimension of this problem in a given culture (Nickerson, 1994; Sternberg, 1996; Prentz & Naples & Sternberg, 2003).

- Strategies for solving ill-structured problems – in terms of cognitive effort, these problems require heuristic rather than algorithmic approach to be solved. The solving approach is creative, unpredictable, often ambiguous. Different solutions can be offered, each having their advantages and disadvantages. When discussing ill-structured problems, participants should stand on opposite or alternative points of view and should bring arguments to justify the proposed solution (Voss, 1988; Sternberg, 1996; Mitchell & Kowalik, 1999; Jonassen, 1997, 2010).

Drawn theoretical premises, however, face significant difficulties in their methodological implementation. In a study G. Abimbola, P. Robert Duimering and Z. Zhong (2006) demonstrate the importance of integrating the gestalt and incremental search approaches to solving ill-structured problems because solving complex real problems usually involves periods of incremental search as well as repeated cycles of frustration, insight and cognitive restructuring. The same authors think that the literature has generally emphasized individual rather than group problem solving, as they point out the probable reason for this to be the difficulty in the theoretical and methodological justification. According to these authors group problems are theoretically more complex than individual because they are characterized by distributed information and distributed cognition, as well as group social properties (e.g, norms, member status, groupthink, etc.) that may affect behavior and performance by limiting the effectiveness of information sharing". Few methods reflect the specific characteristics of group problem solving, and there are no adequate methods to overcome the difficulties in integrating different approaches to solving problems in a group context. The same authors propose Balance Theory Approach to Group Problem Solving, based on Heider's balance theory (Abimbola & Duimering & Zhong, 2006).

In this study an alternative approach is offered to the described problems. The starting point is the assumption that the creative solution of ill-structured problems in an intercultural educational context is a group process that could be presented taxonomically. For taxonomic character is considered "the presence" of students in a given level of school institution. For taxonomic category are considered strategies formulating and solving problems in a problematic situation based on incremental search approaches and Heuristics, based on gestalt approaches.

The selection and ranking of the strategies is justified by the leading position of intercultural communication, which presented or not in a group ill-structured problems solving, sets the emergence of conflicts. They are usually due to differences in the so called participants' "Functional fixation" – mental setting, strongly influenced by cultural context, which implies the individual's behavior (Sternberg, 1996). Therefore, adaptation and taxonomic ranking of strategies for solving problems is based on The theory of reasoned action (TRA), developed by Fishbein and Ajzen (1975), extended with the concept of cognitive dissonance, by Festinger (1957).

According to the chosen approach, the group formulating and group problem solving is conceptualized on an individual level as a structured, purposeful transition from emotional to rational way of processing information. The idea is that at the beginning of this process the student is able to formulate and solve problems only in emotional manner, because it is innate, and the student has poor cognitive experience and was not trained

otherwise. For the emotional way, the unconscious action is typical, as well as the automatically prepared formulations, and usage of common values and beliefs. At this stage there is a real danger of conflicts during group communication because of the culturally diverse environment and because of the subjective norms of participants. Activation on two levels is needed – personal and group. On a personal level, according to Fishbayn's social-cognitive model, subjective norm reflects the student's perception of what others want him to do, and it is based on a set of beliefs of significant others' norms and motivation to adhere to them (Ajzen & Fishbein, 1980). Regarding the problem solving in terms of intercultural communication, this means that in the course the students were assisted in build their own positive attitude to the problem and its solution, without destroying their authentic socio-cultural attitudes. This effort leaves the students and teacher on a subjective level. But in the case what's important is the interaction that occurs and develops within the group.

The goal is to obtain dynamics of belief, i.e. here is the role of cognitive dissonance in which students "are going to fit" their behavior to the real situation and they will acquire desirable, but not conformable behavior. This can happen when initially unified step-by-step strategies are used and support the teacher while formulating and solving problems, and also during purposeful organized group process. With the gradual retraction of teacher's support and more complex strategies, students will manage the dissonant cognitions and will use more rational instead of emotional action in formulating and solving problems. Rational action is characterized by conscious effort, consideration and use of deduction. According to cognitive psychology, the rational way of handling information is fully developed only just at 20 years of age. This is another prerequisite for the development of taxonomic strategies of creative group problem-solving.

Taxonomy of strategies for formulating and solving problems, as well as adequate methods and tools for implementation of activities are presented in the didactic models.

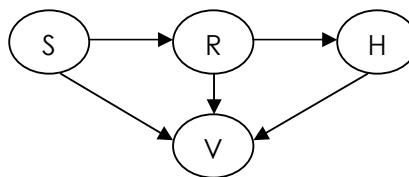
Didactic models for intercultural communication through group ill-structured problem solving

In this paper, didactic models for intercultural communication are presented through group ill-structured problem solving. According to the theoretical foundations, the suggested models are based on two approaches.

Genealogical approach. This approach can be applied to intercultural communications. The important points in Genealogy of school intercultural communications are drawn according to Hofstede's view (1993):

- Symbols (S) – words, gestures, pictures, objects.
- Heroes (H) – individuals possessing valuable qualities for the particular culture.
- Rituals (R) – Holidays, traditions, religious rituals.
- Values (V) – cultural core, the hidden social meaning of culture. Figure 1 illustrates the possible relations between these points.

Figure 1: Genealogy of intercultural communication according to Hofstede (1993)



- *Possible metamorphoses are:* from linguistic deficit to linguistic diversity; from routine ceremonies to pluralistic choice of traditions; from culturally burdened informal relationships to business and friendly relations; from the social role in the community to publicly recognized social roles; from emotional behavior to rational behavior; from cognitive dissonance to dissonance cognitions management; from community class models to role models of social significance.
- *Possible critical points are:* language loss, loss of traditions, shame of affiliation, discrimination, ridicule, rejection, escape, cultural depersonalization, aggression, assimilation, segregation; loss identity.
- *Possible transitions:* from an ending to a new beginning are the dichotomous pairs “prerequisite and result”: rejection – tolerance; marginalization – inclusion; integration – overall socialization.

In terms of genealogy, the following regularity is typical for the purposeful development of intercultural processes in school: initially there are more critical points and chaotic transitions, and less metamorphoses and endings as new beginnings. Gradually the critical points become less and less; the metamorphoses become more tangible; transitions – many more endings to new positive beginnings.

Table 1. Taxonomy of strategies for creative solving of ill-structured problems

LEVELS	CATEGORIES (STRATEGIES)	
PRIMARY SCHOOL Level 1.	4 steps strategy 1. Understand the problem 2. Finding Ideas 3. Judging Ideas 4. Decision making	
Level 2.	5 steps strategy 1. Finding facts 2. Finding the Problem 3. Finding Ideas 4. Judging Ideas 5. Plan of Action	
JUNIOR HIGH SCHOOL Level 1.	6 steps strategy 1. Finding the problem 2. Representing the problem 3. Planning the solution 4. Carrying out the plan 5. Evaluating the solution 6. Consolidating gains	7 steps strategy 1. Problem identification 2. Problem definition 3. Strategy construction 4. Information representation 5. Resource allocation 6. Implementation 7. Monitoring a. evaluating
Level 2.	6 steps strategy 1. Problem definition 2. Problem analysis 3. Establish the goals 4. Generate possible solutions 5. Analyze the solution 6. Implementation	6 steps strategy 1. Decide whether or not there is a problem to solve 2. Identify and clarify the problem 3. Generate potential solutions 4. Evaluate potential solutions. Select a solution 5. Implement the solution 6. Evaluate the outcomes
	7 steps strategy 1. Problem Definition 2. Problem Analysis 3. Generating possible Solutions 4. Analyzing the Solutions 5. Selecting the best Solution(s) 6. Planning the next course of action (Next Steps) 7. Implementation	7 steps strategy 1. Problem identification 2. Problem definition 3. Strategy construction 4. Resource allocation 5. Generating possible Solutions 6. Evaluating 7. Implementation a. Monitoring
HIGH SCHOOL Level 1. Level 2.	PROBLEM-SOLVING CYCLE Problem identification ↓ Definition of Problem ↓ Constructing a strategy for Problem solving ↓ Organizing information about a problem ↓ Allocation of resources ↓ Analyzing the Solutions ↓ Plan of Action ↓ Monitoring a. Evaluation	SOME HEURISTICS Means-End Analysis Working Forward Working backwards Generate and Test Reduction Trial-and-error Insight Analogy Hill climbing

The taxonomic approach refers to the formulation and creative problem solving in a group work. While constructing the taxonomy, the assumption of Anderson (1987) should be taken into an account, that there are two main types of critical problems which determined two different types of problem solving procedure. They are conventionally differentiated into novices and experts. Novices use weak-method procedures. These procedures are independent of the context and require considerable mental effort during the realization. They are close to Newell and Simon model. Experts use specific for the context procedure. These are combinations of specific problem-solving situations and a series of compiled actions leading to solutions. These solutions are, in a way, automatically triggered, and procedures are created by successful repetitions (Anderson, 1987).

The taxonomic categories-strategies are adapted version of the most common strategies known in the literature for creative problem solving as well as common techniques and methods for creative solutions, which are combined by Sternberg as heuristics (Draze, 1986a, 1986b; Voss, 1988; Nickerson, 1994; Sternberg, 1996; Mitchell & Kowalik, 1999; Jonassen, 1997, 2010; Prentz & Naples & Sternberg, 2003).

Didactic models for intercultural communication in primary school

Model validation. In primary school, on the first level, work begins with the whole class/group. From the problematic situation 2-3 specific issues are drawn and are divided into easy to solve solution to sub-problems. Then the class/group is divided into small groups. These small groups work on specific sub-problem in a cooperative way – each offering solutions to its problem (McInnery & Roberts, 2004). Then decisions are discussed with the entire class and a common action plan is created.

On the second level, the small groups are already working with problem situations which have been previously discussed in class/group with the teacher and have been structured. Using the collaborative approach each group works on a structured situation and proposes a solution plan (McInnery & Roberts, 2004). Finally, the entire class/group chooses the best plan among the plans of the groups or creates a combined one from the best suggestions.

On both levels, the teacher is the leading figure in organizing and implementing the activities while the students are working with one particular strategy that they are familiar with. The advantage of this approach in primary school is that the transition from first to the second level is defined by the upgrade and the logical change of strategy according to students' increasing skills. Primary school teacher can develop standard work form aiming to consolidating their skills as a prerequisite for gathering an experience. Another distinct advantage is that the teacher is able to observe the group process and to manage it while the intercultural communication which is forming at the same time.

Characteristic of the intercultural communication: poorly structured, unstable, with critical events. *Cultural genealogy:*

- *metamorphoses:* from linguistic deficit to coordinative bilingualism; from routine ceremonies to conscious cultural traditions; from particular cultural symbols of its own culture to more abstract symbols; from culturally burdened informal relations to short-term friendships; from social roles in the community to “student” social role; from emotional behavioral models to emotional-rational behavior models; from cognitive dissonance to management of some dissonance cognitions;

- *critical points*: loss of language, loss of traditions, shame of affiliation, underestimation, ridicule, rejection, escape, inferiority, cultural depersonalization, discrimination and aggression;
- *transitions*: unstable act of tolerance and inclusion.

Organization of solving group ill-structured problems:

I. level

1. Problem situation.
2. Formulating the problem – working with the entire class/group.
3. Formulating the sub-problems – working with the entire class/group.
4. Dividing the class into smaller groups of 4-5 students.
5. Dispensation of problems to be solved.
6. Working on problems in small groups (4-steps strategy, Table1).
7. Discussing action plan – working with the entire class/group.
8. Plan execution – working with the entire class/group.

II. Level

1. Problem situation;
2. Structuring the problem situation and formulating the problem – working with the entire class/group.
3. Dividing the class into smaller groups of 4-5 participants.
4. Working in small groups (5-steps strategy, Table1).
5. Discussing groups' action plans (choosing plan or constructing of a plan) – working with the entire class/group.
6. Plan execution – working with the entire class/group.

Teacher main roles: leader, mentor, source of information, expert, friend, mediator, model, initiator. *Suitable methods*: talk, discussion, brainstorming, play, drawing, dramatization.

Didactic models for intercultural communication in junior high school

Model validation. In junior high school, students are working alone in the problem situation and are forming small groups with the discrete teacher's support. The approach to group work is again collaborative and at the end, a summarized plan is discussed and implemented. Teacher interference is indirect (McInnery & Roberts, 2004).

On the first level, the process runs so that decisions are evaluated after the plan execution. This is so because on this level, teacher support is still considerable and the implementation may not be great but still not to fail.

On the second level, decisions are evaluated multiple times in the different groups because a teacher role is getting weaker and the decisions are becoming greater responsibility for the class/group.

In junior high school stage different step strategies are used even though they are close they differ in the content of some elements. The purpose of that is that the students to gather experience in using different decision instruments considering the particular problem situation. As it was justified, this gives them opportunity to form more rational behavior for ill-structured problem solving, in a diverse cultural environment.

Characteristic of the intercultural communication: structured, unstable, with critical events. *Cultural genealogy*:

- *metamorphoses*: from coordinative bilingualism to multilingual awareness; from conscious cultural traditions to other (foreign) cultural traditions; from particular cultural symbols of its own culture to more abstract symbols; from short-term friendships to more sustainable friendships and business relationships ; from social roles “student” to new social roles (schoolmate, sportsman, etc.); from emotionally- rational behavioral models to rational

- emotive behavioral models; from cognitive dissonance to management of more and more dissonance cognitions;
- *critical points*: shame of affiliation, inferiority, ridicule, rejection, escape, discrimination and aggression;
- *transitions*: sustainable act of tolerance and inclusion; unstable integration.

Organization of solving group ill-structured problems:

I. Level:

1. Problem situation.
2. Dividing the class/group into smaller groups with the discrete help from the teacher;
3. Problem solving collaboratively in small groups (each group chooses 6 or 7-steps strategy, Table 1).
4. Discussing the Action plan with the entire class/ group.
5. Plan execution by the entire class/group.
6. Evaluation of the implementation (the approach could be again of working in small groups or the entire class/group).

II. Level

1. Problem situation.
2. Dividing the class/group into smaller groups with the discrete help from the teacher.
3. Collaborative problem solving and decision evaluation (each group chooses 6 or 7 – steps strategy, Table 1).
4. Discussing the Action plan with the entire class/ group.
5. Plan execution.

Teacher main roles – moderator, mediator, selector of information, friend, consultant, coordinator, collaborator. *Suitable methods*: discussion, debate, School Theater, simulation, collage, drawing, reflexive methods, specific methods from different branches of science.

Didactic models for intercultural communication in high school

Model validation. In high school, students already work with generalized problem solving cycle, which is their reference point. They organize their work and take actions. They can choose between dividing into small groups, collaborating, or co-operating their activities. It is even possible to take on competitive approach while solving problem situation. The teacher does not participate in the process directly. He is just answering specific question or gives support if he is asked. Sometimes he can object and become an equal participant in the process.

On the first level, students choose between the familiar step-strategies, using heuristics or combining two approaches for problem solving. On the second level, they can even create their own strategies in which they combine steps and heuristics or fully original strategies. At this stage the intercultural communication should have become inherent part of problem solving process.

Characteristic of the intercultural communication: structured, relatively stable. *Cultural genealogy:*

- *metamorphoses*: from multilingual awareness to linguistic diversity; from other (foreign) cultural traditions to pluralistic choice of traditions; from sustainable friendships to lasting relationships; from new social roles to socially significant social roles; from rational emotive behavioral models to rational models of behavior; from cognitive dissonance to management of dissonance cognitions; from community class models to socially significant role models;

- *critical points*: shame, discrimination and aggression, loss identity;
- *transitions*: sustainable acts of tolerance, inclusion and integration, partial socialization.

Organization of group ill-structured problem solving:

I. Level

1. Problem situation.
2. Working in a large group or dividing the class into small groups without teacher's help.
3. Collaborative or cooperative problem solving – the class and/or every small group chooses between familiar strategies and/or heuristics. (Table 1).
4. Discussing action plan (working in small groups or the entire class).
5. Plan implementation (again, working in small groups or the entire class).
6. Execution evaluation (again, working in small groups or the entire class).

II. Level

1. Problem situation
2. Working in a large group or dividing the class into small groups without teacher's help.
3. Collaborative or cooperative problem solving – the class and/or every small group creates its own strategy and/or heuristics. (Table 1).
4. Discussing action plan (working in small groups or the entire class).
5. Plan implementation (again, working in small groups or the entire class).
6. Execution evaluation (again, working in small groups or the entire class).

Teacher main roles – consultant, trainer, mediator, adherent, collaborator, facilitator, tutor, opponent, competitor. *Suitable methods*: brainstorming, representational methods, conflict management, cross analysis, transactional analysis, forum theater, photo-videotaping, criteria net, abstract models, method of focal objects; morphological analysis, research; root cause analysis, specific scientific methods.

Summary

The proposed models are an opportunity to improve the intercultural communication in school through creative group ill-structured problems solving in the following subjective aspects:

The students will be able to understanding others through themselves and despite themselves – empathic intercultural communication:

- Non-logical, beyond common manner, but righteous act in every situation – intercultural communication as a flexible, postmodern communication;
- No adapting but development through deployment of everyday life situations;
- Diversity as an action rather than status; intercultural communication as acceptance rather than conformity;
- Establishing oneself through community - intercultural communication as a tool of rationalizing identity within and through foreign and domestic culture;
- No indication of diversity but acceptance of its existence in human situations – intercultural communication as a vehicle of existential interculturality.

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