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**TEMPORAL AXIOLOGICAL ASPECT OF GROUP
INTERCULTURAL COMMUNICATION
DISCOURSE**

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Abstract

The article deals the axiological study of the virtual and real group communication cognitive modeling in the form of dialogue speech-thinking activity interactions. Intercultural communication temporal assessment is based on psycholinguistics approaches and combinatorial analyses of the dialogues and group communication regarding the attributes of speech and mental acts of discourse. The algorithm of Ford-Fulkerson theorem and directed graphs theory are used to construct the discursive flow of the maximum intensity. The proposed model as an axiological predictive discursive tool for assessing the maximum intensity of group discourse provides identification of the busiest and problem areas of speech communication. The authors consider possibilities of the model in the process of assessing the speech load of the group members, the duration of communication, taking into account the cognitive-competence and communication characteristics of the participants of communication. The expediency of optimizing the discourse to improve the efficiency of educational and professional communications is specified. These concepts reflect the most general essential features of group discourse as a phenomenon, which consists of the discursive flows between subjects and the maximum discursive flow of group communication determined quantitatively. To develop the conceptual apparatus of the study, the philological concept discourse undergoes conceptual discretization, it is modeled by a set of parallel dialogues placed in the communication space in accordance with the structure of communication.

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1. Introduction

1.1. The role of cognitive modeling in group discourse synthesis

The increasing role of group intercultural communications in modern society in order to form and improve communicative competences (Golub, 2012; Luhmann, 1995) improves the interest in considering communication as a discursive speech-making process occurring at the levels of structures of distribution of dialogues-channels of mutual information transfer. Taking in the account above-mentioned, we considered the speech act as a semantic unit of discourse (Kotelnikova, 2014). In modern microsociums one of the conditions for successful problem solving is the creation of optimal ways to manage business and professional communication in a limited time based on the design of situational models of group thematically oriented discourses. In this case, we should bear in mind the extralinguistic, pragmatic, socio-cultural, psychological and other factors of communicants.

In the conditions of "discursive revolution», the use of cognitive models of group discourse synthesis contributes to the removal of cognitive, psychophysiological and competence barriers of communication. Such models should take into account the peculiarities of speech and extralinguistic activity of communicants, the presence of intercultural competence necessary for communication (Risku, Windhager, & Apfelthaler, 2013, p. 33).

2. Problem Statement

Group educational communication is presented in the form of a continuous exchange of speech acts of many subjects, differing in perception of the world, type of thinking, categorization and conceptualization of concepts with different pictures of the world. The processes of generation, understanding and functioning of speech acts as the basis of communication reflect not only the subject content, but also the subject-subject interaction (Fairclough, 2000). It is a complex type of communication where language is accompanied by various extralinguistic systems of psychic detections. In group communication, it is possible to transfer messages between any communicants, but the initial amount of content is usually reported by the teacher (the source of information) controlling its assimilation. Understanding, interpretation and production of group discourse as communication processes reflecting the subject content depend on the subject-communicant group interaction, also due to heterogeneity of knowledge, competencies and psychotypes of subjects (Zimnyaya, 2001; Korobkova, 2013, p. 14). There is a problem of the analysis, forecasting and temporal estimation of similar processes of communication.

The problem cannot be solved within the existing closed terminological apparatus. To develop the conceptual apparatus of the study, the philological concept discourse undergoes conceptual discretization. It is modeled by a set of parallel dialogues placed in some way in the communication space in accordance with the structure of communication (Dooley & Stephen, 2000).

3. Research Questions

3.1. Studies of the temporal axiological aspect of group discourse communication

Dialogues consist of dialogue acts, considered in aspect activities as a generalization of the theory of speech acts (Makarov, 1999) with representation through speech, mental, extralinguistic and pausal attributes. In accordance with this concept, the concepts of elementary, interconnected speech, extralinguistic, pausal and corresponding mental acts (Kotelnikova, 2014) aimed at real, virtual (in communication networks), collective or individual addressees – participants of communication are introduced. Group discourse is modeled by the dialogue structure of indivisible temporalities of discrete speech, extralinguistic, pausal and corresponding mental acts, the characteristics of which are set empirically or prognostically and take into account the anthropoid factor of communication of communicants with different levels of knowledge, communication competencies possessing the characteristics of personal psychotypes. In the dynamic aspect of communication, it is advisable to talk about the distribution of discrete temporal attributes in the process of communication, group discourse dynamics. Group discourse is understood as a process that marks the attributes on a conditional scale associated with the physical time of communication (Zima & Brone, 2015).

It is an item of interest to clarify a number of issues. What are the attributes of dialogue communicants evaluating their temporal intensity? What is the maximum intensity of the dialogue inheriting in this pair of communicants? What determines the natural duration and pace of dialogues? How is the maximum intensity of dialogue inheritance in this pair of communicants limited? What are the group properties of the dialogs?

4. Purpose of the Study

The main goal of this article is assessment of the group discourse maximum intensity in a given structure of intercultural communication, taking into account the individual characteristics of its participants. To reach the aim of the study, it is urgent to solve the interrelated cognitive-qualitative and quantitative tasks including such research objectives as:

- Development of conceptual apparatus, the creation of a qualitative cognitive model and the actualization of the group discourse model by means of quantitative linguistics.
- The sequential solution of these problems is an algorithm of the study.

5. Research Methods

5.1. Methodological settings for this study

The research uses a symbiosis of cognitive and quantitative linguistics methods in combination with psycholinguistics approaches. The joint application of cognitive linguistics and psycholinguistics approaches is used to form an "animated" vector structure of group discourse based on the theory of oriented graphs and methods of psycholinguistic observation and testing of a group of different communicants for the purpose of translating certain received information from one language to another, interpreting the meaning and forming it in the form of a certain number of speech acts (Arik, 2015, p.

425-427). The quantitative approach is used to simulate the dynamics of the processes of group communication analysis and evaluate its parameters.

5.2. Research methods for group discourse analysis tools

- The method of cognitive modeling allows analyzing discourse on textual and contextual levels, taking in account discourse textual structure and the nature of the context.
- The psycholinguistic method is used to study the internal structure of group discourse based on the theory of oriented graphs
- The quantitative method is used to simulate the dynamics of the processes of group communication analysis and evaluate its parameters.

6. Findings

6.1. Complex analysis of group discourse based on the terminological conceptual apparatus

Actualization of the group discourse in different pairs of communicants depends on temporality of conversations assessed by the relevant attributes dialogue acts – derived from the elements of the pair corresponding properties of matrices communicants temporality: $a_{ij} = (t_s, t_m, t_e, t_p)_{ij}$ и $a_{ji} = (t_s, t_m, t_e, t_p)_{ji}$, where t_s, t_m, t_e, t_p – temporality of speech, extralinguistic, pausal and corresponding mental acts of the communication parties. The space of pairs of numerical vectors of temporal acts is compared to the space of temporal images of their dialogue acts. By its nature, the discourse is intercommunicative, represented by many dialogue acts, the number of which manifests the intensity of the dialogue. The maximum intensity of the dialogue is inherited by the pair of communicants determined by the structure of the group discourse and the temporalities of its dialogue acts.

The attributes dialogue acts allows to determine the natural duration and pace of the dialogues. The pace of dialogue is further understood as the rate of actualization of dialogue acts, that is, the number of dialogue acts per unit of time. It significantly depends on the properties of dialogue acts (Steen et al., 2018). The concept of dialogue is defined as a set of topics actualized by it in the process of communication, and the concept of a cross-section of the discursive flow reflecting the group properties of dialogues is introduced, which will be discussed below. There are both qualitative and quantitative hierarchical dependencies between categories of discursive elements.

On the basis of this terminological conceptual apparatus, the following problem is modeled in the aspect of graph theory. For cognitive modeling of heterogeneous oriented communication, group discourse is represented by an oriented graph in which for each communicant identified by vertex $v \in V$ sets of preceding and subsequent dialogues are defined. In the digraph they correspond to the set of all arcs $A(v) = \{(v, w) \in E\}$ entering vertex v and the set of all arcs $B(v) = \{(w, v) \in E\}$ emanating from vertex v . For the teacher as the initiator of group discourse, $A(v) = 0$ (arcs are not included in vertex v), and for the teacher as a virtual expert taking control information, $B(v) = 0$ (arcs do not originate from the corresponding role of vertex v).

To simulate and study the flow distribution in the structure of the group discourse in a communication network $T = (S, \tau)$ with the network $S = (V, E)$ introduces the concept of a cross-section

of group discourse that separates the source of the discourse from the place of its control, denoted by $D = (X, Y)$, such that if $X \subseteq V, s \in X, t \notin X$ and $Y = V \setminus X$, then D is the set of arcs $D \subseteq E$, such that $D = \{(v, w) \in E \mid v \in X, w \in Y\}$. In the network $T = (S, \tau)$, the intensity of the section $D \subseteq E$ is a nonnegative number $\tau = \sum \tau(e), e \in D$, equal to the discursive flow between communicants, situationally formed by dividing a group of communicants into two subgroups. According to the Ford-Fulkerson theorem (Galkina, 2003), the maximum discursive flow is equal to the minimum of the intensities $D_{min} = (X, Y)$ of the group discourse sections, i.e. $P_{max} = \tau(D_{min})$. The implementation of the task is facilitated by the combination of diverse qualitative and quantitative modeling features in the scientific and cognitive approach.

Based on the proposed model dialogue group discourse contains the situation of two-way translation and transport of the episodes of discourse is analyzed. In group discourse each communicant becomes the addresser after a dialogue with the current sender, then communicant transfers and reports the received contents to the following communicants (Steen et al., 2018). The assessment of the dynamic situation of the intercultural communication is considered on the basis of a discrete model of group discourse (Fig. 1). The structure of group intercultural communication is schematized by digraph $S = (V, E)$ with source $s \in V$ (vertex 1 is a beginning of group discourse) and drain $t \in V, s \neq t$ (vertex 7 – ending of group discourse). Numbered vertices identify communicants from the teacher (1) to the last subject (6) of the communication. The digraph arcs are oriented towards the addressees, to whom the main efforts and meanings of the dialogues are directed. Vertex (7) simulates the teacher as an expert of group discourse. The communication environment of the group is heterogeneous in terms of speech, extralinguistic and pausal attributes of the characteristics of dialogue acts.

The quantitative implementation of the model assumed a situation where in the considered structured group discourse the speech message is distributed from the source of information to the place of its control. The reported meanings of the source of information are available successively to different communicants interpreting the meaning and performing its translation from one language to another, becoming initiators of messages for other communicants (Dancygier & Sweetswer, 2014). The teacher initiates the discourse and evaluates the effective semantics at the stage of completion of the group discourse, checking the coincidence of the perceived meanings with the meanings of the original discourse. The specified roles of the head of the group intercultural communication are reflected by the dashed feedback line (Fig. 1). Assessment of the correctness of group discourse is reduced to the analysis of semantics as a result of the processes of reception, transformation and transmission of messages.

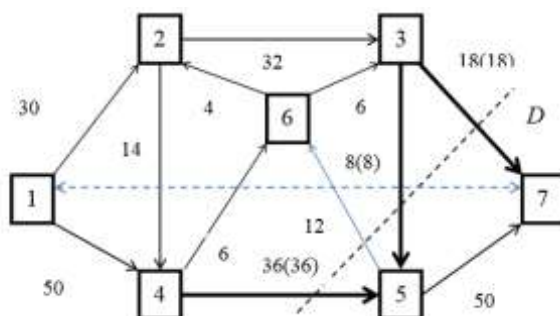


Figure 01. Group discourse graph

For quantitative forecasting of problem areas of communication, the estimation of group discourse from the set of admissible alternatives is realized on the basis of construction of a discursive flow of maximum intensity with the use of the algorithm of mark placement of the Ford-Fulkerson theorem (Galkina, 2003). Quantitative results of the study indicate that temporal dialogue structures in the comprehension and transmission of different volumes of content reflect the attachment of discourse to communication situations. Heterogeneity of competencies and communicants psychotypes has led to a significant heterogeneous distribution of flows in the structure of group discourse (Evsukova, Agababyan, Kotelnikova, & Germasheva, 2017). In the considered situation of communication, the maximum discursive flow of dialogue acts coincides with the value of the discursive flow of the minimum section D , composed of dialogues highlighted by thickening of arcs with the maximum intensity of the discursive flow of group discourse $\tau(D) = 12+36+8+6=62$ dialogue acts and the most lively group intercultural communication. Semantic transformations of the main meanings of dialogues occur, as a rule, in the places of the most intensive discursive flows, requiring special attention of the head of the educational process. The results obtained in combination with the corresponding semantic analysis of the discursive flow reflect the main temporal processes of group discourse and give a temporal assessment of the real intensity of group discourse in the conditions of intercultural interactions, which allows us to determine the temporal boundaries of the dialogues of group discourse.

7. Conclusion

Thus, the philological concept-representation "discourse" is objectified by lexical units of concrete semantic representation of perceived signs of this phenomenon: temporalities, dialogue acts, dialogues. In the process of abstraction development, the concept-representation is considered further through the prism of graph theory, transformed into a graphical concept-scheme and then into a concept-notion. The latter reflects the most general essential features of group discourse as a phenomenon, which consists in the fact that the discursive flows between subjects and the maximum discursive flow of group communication are determined quantitatively.

- The proposed research model as an axiological predictive discursive tool for assessing the maximum intensity of group discourse provides identification of the busiest problem areas of speech communication.
- The model assesses the speech load of the group members, the duration of communication taking into account the cognitive-competence and communication characteristics of the communication participants, specifying the feasibility of optimizing the discourse to improve the effectiveness of educational and professional communications.
- The proposed conceptual apparatus and cognitive qualitative-quantitative approach of philological research may be the item of interest to the theory of discourse as a whole.

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