IFTE 2018
4th International Forum on Teacher Education

DETERMINANTS AND MARKERS OF FORMATION OF INCLUSIVE COMPETENCE OF FUTURE TEACHERS

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Abstract

The purpose of this study was to identify the exogenous determinants of the process of the development of inclusive competence of future teachers in the conditions of an educational organization of higher education, as well as to describe and justify the endogenous markers for the inclusive competence formation of future teachers. The conducted research allowed for the possibility to draw a number of important conclusions, the main one of which is the approbation of the theoretical model of inclusive competence formation of future teachers in practice. During the pedagogical experiment, it was found that designing an inclusive informational and educational environment plays a key role in this process.

In this study, we relied on the developed structured and genetic model for the formation of inclusive competence of future teachers, which has a structural organization, it is set by the content of theoretical and methodological approaches and is morphologically represented by five units: value-target, organizational, content, technological, and effective-evaluative.

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Keywords: Higher education, inclusive informational and educational environment, inclusive competence, pedagogical design.
1. Introduction

New landmarks of the education system are manifested in various directions of its development, i.e. the construction of continuous education system, the emerging forms of alternative education, the development of new approaches to the formation of education content, and the creation of inclusive educational environment accessible to all categories of students, including people with disabilities. Inclusion supports and develops society and its subsystems, including educational institutions, and in relation to which all members of society have the right to freely choose the forms of participation in all social processes at all stages of education, at work, in the implementation of various social roles and functions (Nazarova, 2011). In such circumstances, the issue of improving the process of developing inclusive competence of future teachers is becoming increasingly important (Martynova, 2013; Nikitina & Kurnosova, 2012).

2. Problem Statement

The issue of the development of students’ competence to work with people with disabilities is relevant not only in Russia. Many works of foreign scholars are focused on the issues of teaching students with disabilities. One part of the research indicates the presence of barriers for the effective teaching of students with special needs. Lack of information (Morgado et al., 2016; Morriňa et al., 2017a), inadequate education and training of teachers to work with disabled people (Hewett, Douglas, McLinden, & Keil, 2017; Rodríguez Martín, Álvarez Arregui, & García-Ruiz, 2014), lack of convenient and accessible infrastructure (Lourens & Swartz, 2016; Strnadová, Hájková, & Květoňová, 2015), lack of convenient and accessible virtual learning environment (Bakken et al., 2017; Zubillaga Del Río & Alba Pastor, 2013), poorly functioning interaction of university staff and special employees (tutors, mentors) (Björnsdóttir, 2017; Morriňa et al., 2017b; Murphy 2017), insufficient consideration of students’ individual characteristics (personal qualities) (Emmers et al., 2017), lack of favorable social environment (Björnsdóttir, 2017), rigidity of curriculum (Björnsdóttir, 2017), (Hewett, Douglas, McLinden, & Keil, 2017), (Rodríguez Martín, Álvarez Arregui, & García-Ruiz, 2014) and teaching methods (Björnsdóttir 2017), lack of funding and administrative support (Cambridge-Johnson et al., 2014) have been identified.

There are separate experimental studies in this area: a training of specialists of inclusive universities (Dokhoyan, Ismailova, Yegizarjants, & Sokolova, 2017), a special training that informs students not only about disability but also how to respond to the needs of people with disabilities (Morriňa et al., 2015), and daily behavioral feedback (Whitcomb, Hefter, & Barker, 2016). However, the system solutions of such formation of inclusive competence are not offered to students neither in foreign, nor in Russian studies.

In this article, a new approach to the inclusive competence formation is proposed, based on a theoretical model developed by the authors. Revealing the theoretical and pedagogical preconditions confirming the reliability and conceptual role of the structured and genetic model of the process under investigation allowed to systematize the terminological field of the problem and to identify the main categories (inclusive competence, pedagogical design, and design of inclusive informational, and educational environment). In this connection, it is necessary to clarify a number of terms included in the proposed model.
Pedagogical design is a technology for creating educational products that are implemented in the informational and educational environment, which provides expediency, didactic efficiency, and consideration of educational needs of participants of education process (including people with disabilities).

In the context of the study, it is necessary to define the inclusive information and education environment as a single space that integrates educational products and computer-telecommunication technologies of interaction, which mediates the formation of a synergetic system of competences for effective professional activity and social self-realization in the information society among the subjects of educational process, such as those with special educational needs (including people with disabilities). Design of inclusive informational and educational environment is a complex management procedure for selecting quality education content, defining the structure and means of presenting educational products in an information and educational environment accessible to the participants of educational process, such as those with special educational needs (including people with disabilities). Training of future teachers for the design of inclusive informational and educational environment is defined as the purposeful activity of the participants of educational process, ensuring the acquisition of knowledge and skills by students of the university and formation of competences for creating an inclusive informational and educational environment with the given properties (Martynova, 2013; Nikitina & Kurnosova, 2011, 2012). Inclusive competence is an integrative capacity to qualitatively perform professional and pedagogical functions in an inclusive society, as well as create an inclusive informational and educational environment and provide special conditions that compensate the limitations of life activities of people with disabilities.

The relevance of the problem of developing inclusive competence of future teachers is confirmed by statistical data. The pilot study conducted in 2011 – 2017 included the students and teachers of Chelyabinsk State University, South Ural State Humanitarian Pedagogical University, and South Ural State University (National Research University). The survey of the teaching staff allowed to conclude that not more than 60% of university professors are active users of the informational and educational environment, about 90% of them use Internet resources and only 15% possess the technologies of pedagogical design, that is, they independently develop informational educational resources that meet the requirements of discipline and the opportunities of students, and they are highly demanded in educational practice. More than a third of participants do not feel the need to integrate the training products into the informational and educational environment of the university. The majority of respondents (74%), who are scientific and pedagogical workers, recognize the need to create an inclusive informational and educational environment, while 95% of them consider special training for the design of inclusive environment facilities mandatory, 89% indicate the lack of methodological, technological, and theoretical knowledge to create a quality educational product demanded by students with disabilities. Respondent students in the number of 278 people, among whom 24 students have certain limited health opportunities, were asked questions about the nature and capabilities of the informational and educational environment. Among those surveyed there were no people who totally didn’t use the personal computer and the Internet resources during the training. The majority of students (94%) have the opportunity to use the Internet for educational purposes, 64% are regular users of the external network, not more than 27% of the respondents intensively, almost daily address to some sections of the informational and educational environment of the university, 74% of respondents consider the learning opportunities provided by that resource accessible and useful. 85% of respondents said that they have no necessary skills that could allow them to design the informational
educational resources, the absolute majority (100%) has no idea about the theoretical and methodological foundations for designing an inclusive informational and educational environment.

A separate block of questions was addressed to the students with disabilities in order to identify the difficulties and barriers in the process of studying at a university and the peculiarities of social relationships in a university environment, as well as to be aware of individual and personal problems and the nature of the expected assistance from teachers, students, administration and other structures of the higher education educational organization. Interpretation and synthesis of the data obtained (42% of respondents do not have information about the organization of the educational process; not more than 30% demonstrate interest in the future profession, accompanied by a clear idea of the object and content of professional work; almost half of the respondents believe that educational process in the university is detached from the real activity and is not focused on the maximum training for future work; 60% indicate the lack of necessary tools to monitor the progress of the learning material; 25% is not satisfied with the degree of readiness for independent academic work) allow to determine the absence of a functional, technologically accessible, motivationally attractive inclusive educational and informational environment as the most problematic aspect of learning of disabled students in the higher school (A single concept…), (Martynova, 2013). Consequently, at the scientific and methodological level the relevance of the study is determined by the need to enrich the potential of higher education in the training of future teachers for the design of an inclusive informational and educational environment.

3. Research Questions

What are the exogenous determinants of the process of forming inclusive competence in future teachers in the context of an educational organization of higher education?

4. Purpose of the Study

The purpose of this study was to identify the exogenous determinants of the process of forming inclusive competence in future teachers in the context of an educational organization of higher education, as well as to describe and justify the endogenous markers for the formation of inclusive competence of future teachers.

5. Research Methods

During the research, the following theoretical methods were used: conceptual and terminological analysis of philosophical, psychological, pedagogical and sociological scientific literature; system method (system analysis and system synthesis); constructive modeling; the trends method. Among the empirical methods the following were used: organization of ascertaining and control experiment; questionnaire survey, observation. To identify the differences, we used the statistical methods of data processing and testing of hypotheses put forward ($\varphi^*$-criterion, Pearson $\chi^2$-criterion).

6. Findings

In this study, we relied on the developed structured and genetic model for the formation of inclusive competence of future teachers, which has a structural organization, it is set by the content of theoretical and
methodological approaches and is morphologically represented by five units: value-target, organizational, content, technological, and effective-evaluative.

Let us characterize each of the presented units. Value-target unit includes the definition of a strategic mission, tactical and perspective goals and specific objectives for the formation of inclusive competence of future teachers. We define the strategic mission in the following way: keeping traditions and introducing innovations, inclusive higher education is the guarantor of meeting the actual educational and intellectual needs of the individual, social partners and employers, society and the state. Analysis of scientific and methodological literature allowed to determine the nearest target, that is updating the structure, content and technology of training future teachers for designing an inclusive informational and educational environment. As urgent tasks ensuring the fulfillment of strategic mission and the achievement of immediate and long-term goals, we determine: 1) formation of sustainable motivation of future teachers for productive activities in inclusive education; 2) resource support of the possibility of constructing students’ individual educational trajectory; 3) implementation of step-by-step control and correction of the results of training future teachers for the design of an inclusive informational and educational environment (Nikitina & Kurnosova, 2011).

Organizational unit contains the scientific substantiation of methodological stages reflecting the sequence of inclusive competence formation of future teachers. Each stage is aimed at the implementation of a specific task. Thus, the motivational stage is aimed at the development of sustainable interests, the motives for the needs of professional and personal self-realization in conditions of informatization and inclusive society; the cognitive stage is aimed at acquiring the system of instrumental competencies (pedagogical, communicative, informational) and systemic effects of capturing the complex of skills; the interactive stage provides formation of skills of productive interaction in the process of designing training products and the informational and educational environment in general. The reflexive stage is essential, it actualizes the skills of self-control and self-assessment of inclusive competence components and monitoring of process efficiency.

The actual state of preparation for designing an inclusive informational and educational environment is visualized by a technological matrix - a description of the process in the form of a step-by-step, gradual sequence of actions with an indication of the means used (Kharlanova, 2011). It defines the goals, objectives, forms of activity, and types of differentiated project-pedagogical tasks implemented at each stage within each component of training, as well as the expected result in the context of each stage (Table 1).
Table 01. Characteristics of the formation stages of students’ inclusive competence

<table>
<thead>
<tr>
<th>Stage name</th>
<th>Stage tasks</th>
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| Motivational | 1. Formation of a sustainable motivational and valuable attitude to inclusion  
2. Discovery of opportunities for creative self-realization of the individual in the process of designing an inclusive informational and educational environment |
| Cognitive | 1. Broadening the professional perspective, familiarization with modern scientific trends and tendencies  
2. Formation of the research position of a specialist’s personality  
3. Study of the bases of normative and legal documents of the educational process in the context of education renewal |
| Interactive | 1. Acquaintance with the basics of technological development of the educational process  
4. Design of various types of teaching and upbringing technologies (teaching, personal and practice-oriented, reflexive and active, etc.) |
| Reflexive | 1. Formation of a person’s reflective position and adequate professional attitudes  
2. Improvement of inclusive competence of the individual on the basis of teaching self-analysis of activity and pedagogical reflection |

One of the main units of the model we are designing is the content unit. When identifying the constructs and components of the model, we took into account the nature, purpose and content of inclusive education, as well as objectively existing factors that determine it (Vozgova, 2010, 2011). Given that the result of training of future teachers for designing an inclusive informational and educational environment should be the inclusive competence, and also taking into account the content of normative and program documents regulating the educational process in higher education, we have included in the unit content the professional and valuable (the goal is to form the basis of the personal acquisition of the program content and the motivational and valuable attitude to inclusion), design and didactic (providing the formation of readiness to predict, structure and algorithmize the content in accordance with the given requirements), and practical and participative modules (the goal is to form the communicative competence and professional-personal reflection) (Table 2).

Table 02. The content of modules of training the future teachers for the design of inclusive informational and educational environment

<table>
<thead>
<tr>
<th>Module name</th>
<th>Content characteristics</th>
<th>Teacher functions</th>
</tr>
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<tbody>
<tr>
<td>Professional and valuable</td>
<td>Scientific knowledge: range of fundamental knowledge: policy issues in the field of inclusive education, ways and means to implement it, main ideas, principles, patterns, technologies, advanced pedagogical experience</td>
<td>Consultant and supervisor: stimulation of students to independent acquisition of necessary knowledge, as well as to acquaintance and acquisition of modern information material (normative and legal, informational and methodical, and static)</td>
</tr>
</tbody>
</table>
| Design and didactic | Instrumental competences: subject-oriented, systematized recommendations and normative documents; knowledge of the basic psychology concepts, didactics, educational technologies. | Supervisor and facilitator  
Development of motives, positive needs, attitudes, interests of listeners  
Development of personality traits such as self-control, self-possession, ability to control one’s behavior in difficult conflict situations, tolerance |
As a technological component of the conceptual model of training future teachers for designing an inclusive informational and educational environment we have selected differentiated design and pedagogical tasks - a system of different by structure (initial state, final state, defined conditions, algorithm of achievement) forming and evaluating situations, providing development of educational, communicative, information competencies, and, in combination, the formation of inclusive competence. The study of scientific and methodological literature made it possible to determine the didactic principles imposed on design and pedagogical tasks in the context of our research: the relevance, accessibility, completeness, procedural readiness of the student, inclusive focus, structured information, and differentiation in complexity level (Vozgova, 2011; Nazarova, 2011; Kharlanova, 2010). These didactic principles assume their different functional significance in the learning process and the variety of types and kinds. Since the implementation of comparative, cluster and participative approaches requires structural and didactic reconstruction of future professional activity, we have developed typical situations of inclusive education, within which it is possible to implement reproductive-imitative, interpreting-constructive, creative-modernizing and project-pedagogical tasks, which acquire specific features, determined by the objectives of professional training in each of the modules of the model content unit. Studies analysis has shown that a system of these kinds of problems with different types of connections between them is needed. The chosen system of differentiated design and pedagogical tasks: a) provides continuity and efficiency of training university students for designing an inclusive informational and educational environment by gradually increasing it; b) requires the trainees to use complex social and legal, design and didactic knowledge, and practical and participative skills; c) involves informatization of inclusive education; d) possesses high diagnostic qualities that allow tracking the development of students instrumental (pedagogical, informational, communicative) competencies and their personal characteristics.

Given the structure of training future teachers for designing an inclusive informational and educational environment discussed above, we identified a diagnostic toolkit, characterized the levels of inclusive competence (threshold, base, advanced) and the predicted result, which together constituted an effective unit of the structural and genetic model of inclusive competence formation in future teachers.

To determine the levels of inclusive competence, we considered the value of three parameters (endogenous markers): student’s instrumental competences (indicators: knowledge, skills, attitudes), personal and professional transactions (indicators: formation of social ties, involvement in the design and teaching activities), and personal qualities (tolerance, responsibility, sociability). Basing on the selected parameters and their indicators, the levels of inclusive competence of university students were characterized: threshold (readiness to design objects of inclusive informational and educational environment by algorithm and to provide special conditions in accordance with regulatory requirements), base (readiness to create an inclusive informational and educational environment and to ensure special conditions in accordance with regulatory requirements), and advanced (psychological, pedagogical,
professional and technological readiness to create an inclusive informational and educational environment and to provide special conditions in accordance with regulatory requirements and individual requests of disabled persons and persons with health limitations) (Vozgova, 2011; Nazarova, 2011; Kharlanova, 2010; Ovchinnikova, 2008).

In order to test this theoretical model in practice, an experiment was conducted. Experimental work was carried out in natural conditions of higher educational institutions in several stages. An ascertaining stage of experimental work allowed to determine the actual level of inclusive competence and the quality of university students’ training for the design of an inclusive informational and educational environment. At the forming stage of experimental work the conceptual model was introduced into the educational process and pedagogical conditions were implemented on a case-by-case basis. In accordance with the tasks of the forming stage of the experimental work, four groups of subjects were organized: the control group (CG) and 3 experimental groups (EG), approximately equal in terms of inclusive competence and the parameters of training for designing an inclusive informational and educational environment. In EG-1, a substantial unit of pedagogical conditions was implemented. In EG-2, a process-technological unit was implemented. In EG-3, a set of pedagogical conditions was implemented, including both substantive and process-technological units. In the CG, no special measures were taken to prepare for the design of an inclusive informational and educational environment. Processing, quantitative and qualitative analysis, interpretation and registration of the results of experimental work were carried out at the generalizing stage (Table 3).

<table>
<thead>
<tr>
<th>Group</th>
<th>Ascertaining stage</th>
<th>Control stage</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Threshold</td>
<td>Base</td>
</tr>
<tr>
<td>CG</td>
<td>37.04%</td>
<td>55.56%</td>
</tr>
<tr>
<td>EG-1</td>
<td>41.38%</td>
<td>51.72%</td>
</tr>
<tr>
<td>EG-2</td>
<td>42.31%</td>
<td>53.85%</td>
</tr>
<tr>
<td>EG-3</td>
<td>40.00%</td>
<td>56.00%</td>
</tr>
</tbody>
</table>

We checked our hypothesis with the help of the $\phi^*$-criterion and the Pearson $\chi^2$-criterion. To detect the differences in distribution of inclusive competence levels in CG, EG-1, EG-2, and EG-3, statistically significant differences in each of the groups, including CG, were detected in the ascertaining and control stages using the Pearson $\chi^2$-criterion. Consequently, the educational process provides meaningful changes in the formation of student’s inclusive competence, but the experimental influence has a greater statistically significant effect, which is confirmed by the observed values of Pearson $\chi^2$-criterion (when comparing CG at the ascertaining and CG at the control stage $\chi^2_{\text{observ.}}$ of CG = 22.86; similarly, $\chi^2_{\text{observ.}}$ of EG-3 = 58.12; $\chi^2_{\text{observ.}}$ of EG-2 = 34.02; $\chi^2_{\text{observ.}}$ of EG-1 = 31.87). To confirm the results, we used the $\phi^*$ criterion for Fisher’s angular transformation, according to which the observed recorded value at the control stage of the experiment between EG-2 and CG is 4.891, between EG-2 and CG it is 2.549, and between EG-1 and CG it equals 2.384 (critical value at the significance level of $P = 0.05$ is 1.64, and at $P = 0.01$ it is 2.31). The observed value is higher than the critical value, which indicates the presence of statistically significant
changes in the level of student’s inclusive competence in EG-1, EG-2, EG-3 as compared to CG with the established insignificant difference between the groups at the ascertaining stage of the experiment.

According to the data of the experiment, the results confirm that the level of inclusive competency of future teachers is increasing due to the stage-by-stage preparation for the design of an inclusive informational and educational environment, which makes it possible to conclude that the developed holistic pedagogical concept is effective and practical. It provides a) scientific understanding of the training the university students for the design of inclusive informational and educational environment (intentional aspect); b) the disclosure of its content and specific features (structural aspect); c) the definition of technologies and means of training university students for the design of inclusive informational and educational environment (procedural aspect).

7. Conclusion

Thus, the conducted research allowed to draw a number of important conclusions, the main one of which is approbation of a theoretical model for the formation of inclusive competence in future teachers as a matter of actual practice. During the pedagogical experiment, it was found that designing an inclusive informational and educational environment plays the key role in this process.

The obtained data expand the technological spectrum of training the future teachers for successful activities in modern conditions, and also partially fill in the gap in domestic science and practice in training the students for work with the disabled people.

References


