

opción

Revista de Antropología, Ciencias de la Comunicación y de la Información, Filosofía,
Linguística y Semiótica, Problemas del Desarrollo, la Ciencia y la Tecnología

Año 34, 2018, Especial N°

15

Revista de Ciencias Humanas y Sociales
ISSN 1012-1587/ ISSN-e: 2477-9385
Depósito Legal pp 198402ZU45



Universidad del Zulia
Facultad Experimental de Ciencias
Departamento de Ciencias Humanas
Maracaibo - Venezuela

Competency-based approach to students' training for support of children with disabilities

Viktorya S. Vasilieva¹

¹Chelyabinsk State Pedagogical University, 69 Lenin prospect, 454080
Chelyabinsk, Russian Federation
vasilevavs@cspu.ru

Lilia A. Druzhinina²

²Chelyabinsk State Pedagogical University, 69 Lenin prospect, 454080
Chelyabinsk, Russian Federation
druginala@cspu.ru

Lyubov M. Lapshina³

³Chelyabinsk State Pedagogical University, 69 Lenin prospect, 454080
Chelyabinsk, Russian Federation
lapshinalm@cspu.ru

Larisa B. Osipova⁴

⁴Chelyabinsk State Pedagogical University, 69 Lenin prospect, 454080
Chelyabinsk, Russian Federation
osipovalb@cspu.ru

Abstract

The article presents the analysis of the competence approach in students' training for comprehensive maintenance of disabled children under inclusive education. The main methods are described of educational-methodical work of the pedagogical staff at the Department of Special Pedagogy, Psychology and Subject Methodology of Chelyabinsk State Pedagogical University. As a result, teaching aids are provided to the students for self-education, fulfilling individual assignments and group projects. As a conclusion, a high level of developed professional competencies allows the graduates to provide qualified correctional and developmental assistance with regard to individual psycho-physiological characteristics of all categories of children.

Keywords: Complex Approach, Inclusion, Inclusive Education.

Enfoque basado en las competencias hacia la enseñanza estudiantil para atender a niños con discapacidades

Resumen

El artículo presenta el análisis del enfoque de competencia en la capacitación de los estudiantes para el mantenimiento integral de niños discapacitados en educación inclusiva. Los principales métodos se describen en el trabajo pedagógico y metodológico del personal pedagógico del Departamento de Pedagogía Especial, Psicología y Metodología de la asignatura de la Universidad Pedagógica Estatal de Chelyabinsk. Como resultado, se proporcionan ayudas didácticas a los estudiantes para la autoeducación, que cumplen tareas individuales y proyectos de grupo. Como conclusión, un alto nivel de competencias profesionales desarrolladas les permite a los graduados brindar asistencia correccional y de desarrollo calificada con respecto a las características psicofisiológicas individuales de todas las categorías de niños.

Palabras clave: Enfoque Complejo, Inclusión, Educación Inclusiva.

1. INTRODUCTION

On the one hand, the modern global educational process is characterized by variability of educational systems, their structure, by determining the ways of problems specific solving. On the other hand, it has some general tendencies, one of which is the implementation of inclusive education. Since the main goal of inclusive education is to eliminate all forms of discrimination in the educational process and ensuring the general availability of education, the achievement of this

goal can be realized in different ways. The system of special education for children with disabilities and health limitations (HL) successfully functions in Russia. In institutions referring to this system, special conditions for such children treatment are created, and special educators of various specializations, who are properly and professionally trained, work there. But because these special (remedial) educational institutions are mainly isolated, the society separation into healthy and disabled people begins already in childhood. As a result, education of disabled children in certain conditions limits their interaction with the social environment to a great extent. Mutual education of children might be considered as an alternative to such a system.

At the present stage of general and special (remedial) education development, inclusive education is considered to be an innovative process. Inclusive (French inclusive - including, Latin include – to shut in, to enclose) or inclusion education is a term used to describe the educational process of children with special needs in general (public) schools. The basis for inclusive education provides the ideology which ensures equal treatment of all people, creates special conditions for children with special educational needs, and excludes any possible discrimination of children. Inclusive education is a natural process of general education, which means education availability in terms of adaptation to various needs of all children, ensures access to education for children with disabilities.

Mutual education (or inclusive education) has been recognized by the world's community as the most humane and effective one. Development of inclusive education also is one of the most important directions in the Russian educational policy. Regulations on inclusive education are fixed in the Russian state documents (The Law on Education in the Russian Federation, The National Doctrine on Education in the Russian Federation up to 2025, etc.). Inclusive education is a process of training and education in which all the children, regardless of their physical, mental, intellectual and other characteristics, are included into general educational system and are trained in communities together with their non-disabled peers in the same public education institutions which take into account their special educational needs and provide the necessary special assistance.

Inclusive education of disabled children together with their age-mates is an approach to educating different children in the same classroom rather than in a specially separated group (class) within the general school. Its purpose is to create a barrier-free environment in education and professional training of persons with disabilities. From this perspective, specialists' training for inclusive education is one of the premiums in the system of higher education.

2. METHODOLOGY

The research objective is to theoretically study and practically determine the content of educational-methodical activity of pedagogical staff aimed at the formation of bachelors' professional competencies majoring in special (dialectological) education in the inclusive education. The research scheme included the following aspects: the theoretical study of the conceptual apparatus and the state of the problem; determination of the content of educational-pedagogical activity of pedagogical staff on the formation bachelors' professional competencies majoring in Special (dialectological) education in the inclusive education. The research was performed at Chelyabinsk State Pedagogical University (FSBEI HPT CHSPU), Department of Special Pedagogy, Psychology and Subject Methodology.

The participants included pedagogical staff of the Department of Special Pedagogy, Psychology and Subject Methodology. The research materials were scientific-methodological works of the pedagogical staff of the department of Special Pedagogy, Psychology and Subject Methodology. The methods included: Theoretical methods: analysis of literary data and normative documents on the problem under investigation. Empirical methods: educational-methodical activity modeling; systematization of the materials studied; problem monitoring to get, accumulate and systematize information on educational-methodic

activity content. The investigation was anonymous, within the limits of all ethical medical-psychological-pedagogical norms.

3. DISCUSSION OF RESULTS

Taking into account the requirements of the Law on Education in the Russian Federation and the Federal State Educational Standard of Higher Education (FSES HE) in order to ensure the quality of education, the realization of the competency-based approach is considered to be fundamental in the training system of future specialists. The concept of the Russian educational system modernization defines new social requirements for the development of the life strategy of teachers working with the children. Education results assessment re-focuses from the definitions of qualification, proficiency and decency to that of competence and competency. The dynamic nature of modern professional activities of the specialists in the educational system of younger generation requires such qualities as sociability, communication skills, and ability to quickly integrate into a working team, willingness to adapt to new working conditions and to regulate relationships between people in the collaboration process.

Competency-based education (CBE) was formed in the 1970s in the United States of America in the general context of the competency concept declared by Chomsky in 1965 (University of Massachusetts) in relation to the language theory, and competence, where the latter is interpreted as being based on knowledge, intellectually and personally determined experience in social and professional human life activity. This concept came to Russia from the Anglo-Saxon educational tradition. In the 80s of the 20th century, problems of graduates' quick adaptation to practical work were widely discussed, and qualification profiles were introduced as an attempt of professional activity modeling (Zimnaya, 2004).

Foreign and domestic (Zeer et al., 2005) research surveys on the competency-based approach show that the point is about the system capable enough to objectively evaluate the suitability of each individual applicant for future activities, and develop clear quality criteria for these activities, which allow to carry out targeted training to obtain the necessary certification and recognition in this field (Vasilieva, 2015). The idea of the competency-based approach in teaching appeared in the early 1980s when the article by Landsheer the Minimum Competency Concept was published in the journal perspectives. Education Issues. Originally, it was not about the approach but the competence, professional competence and professional competencies of the person as the purpose and result of education. Competency, in the wide sense, was understood

as a deep knowledge of the subject or skill mastered. As the concept became more popular, its denotation and content expanded. Recently (since the end of the 20th century) scientists began to speak about the competency-based approach in education (Zeer et al., 2005).

Competence, as a unity of theoretical and practical readiness of the teacher to perform his/her professional functions, characterizes not only the work but also the teacher as the subject in his/her independent, responsible, proactive interaction with the world. Through this feature, competency brings together both professional and personal qualities of the teacher, targets them to master their knowledge and their result-oriented application in activities like forecasting, planning and implementation, stimulates the teacher to develop his/her own abilities, aspiration for self-realization in a socially useful activity, and ensures his/her professional development in the period of professional training.

Currently, the competency-based approach is regarded as priority focusing on the objectives - vectors of education: learning abilities, self-identity (self-determination), self-actualization and individuality development (Vasilieva, 2015). In Ermakov's (2009) research, the competency-based approach is regarded as a simulation method for educational objectives and results as its quality standard, the integral reflection of the education result as a

characteristics system of the graduate's readiness to implement one or another activity. The essence of the competency-based approach to highly trained specialists provides the basis for the development and implementation of FSES HE. FSES HE analysis determines the following types of professional activities which graduates – who are doing a Bachelor's degree in pre-school special education and speech pathology – are trained for: correction pedagogics, diagnostics and consulting, research, culture and education. It also confirms the necessity for the development of general professional and professional competencies in graduates.

Let us describe the characteristics of professional competencies (PC). In the field of correctional and pedagogical activity the following competencies are discussed: the ability for rational selection and implementation of corrective and educational programs based on person-centered and individually-differentiated approaches to persons with health limitations (PC-1); willingness to organize remedial and developing educational environment, to choose and implement methodological and technical support, to carry out correctional and educational activities in educational, healthcare and social protection institutions (PC-2); readiness to plan educational and correctional work, taking into account the structure of health deviation, the current state and potentials of persons with health limitations (PC-3); ability to organize, enhance

and analyze their own educational and correctional activities (PC-4).

As a part of diagnostic and consulting activities, the FSES calls for the following competencies in students: ability to perform psychological and pedagogical examination of persons with health limitations, analysis of complex medical, psychological and pedagogical examinations of persons with health limitations based on using clinical, psychological and pedagogical classifications of developmental disorders (PC-5); ability to monitor the achievements of the planned objectives of the educational and correctional work (PC-6); readiness to psychologically and pedagogically assist the families of persons with health limitations and to interact with the nearest concerned network (PC-7). The competencies in research activity include the followings: ability to implement the knowledge in speech pathology, pedagogy, psychology, linguistics, medicine and biology to set and solve the research goals in professional activity (PC-8); ability to use the methods of psychological and pedagogical research, the basics of statistical information analysis, to draw conclusions and present the results of the study (PC-9). In the field of cultural and educational activities the following competencies are developed: ability to work on spiritual, moral and aesthetic development of persons with health limitations, introducing them to the historical values and the national and world culture achievements (PC-10); ability to interact

with public and social organizations, as well as with educational, healthcare and cultural institutions in order to develop and strengthen tolerant consciousness and attitude towards persons with health limitations (PC-11).

The organization of educational environment with due consideration of the above-mentioned competencies provides the basis for the realization of a competency-based approach in higher education.

Successful realization of the competency-based approach to the bachelors' training for the inclusive education directly depends on the quality of educational and methodological work carried out by the university department. During the last 15 years the academic staff of the Special Pedagogy, Psychology and Subject Methodology Department (SEP and SM) of Chelyabinsk State Pedagogical University, has been implementing the competency-based approach to specialists' training in the context of the inclusive education (Druzhinina, 2012, 2003).

Taking into account the necessity of developing students' competencies in the area of the inclusive education of persons with health limitations, the following relevant disciplines were included into the Bachelor degree course: the inclusive education of children with health limitations, Fundamentals of integrated education for children with health limitations. Theoretical level of the ongoing

training, as well as the compliance of materials delivery with the discipline program are systematically controlled, the cross-disciplinary approach in students' training is taken into account, audio-visual aids and technologies are used. The content of desk and practical studies, assignments for individual work within the limits of the disciplines held, are aimed at the formation of general professional and professional competencies, and prepare students to carry out the educational process regarding psycho-physiological, age and individual educational needs of the students, to organize correctional and developmental educational environment, to choose and use methodological and technical facilities, to carry out correctional and educational activities in educational institutions.

Teaching practice is an obligatory part of the educational Bachelor program. It is a kind of training sessions specifically focused on professional and practical training of students (Guslyakova et al., 2005). The organization and contents of the teaching practice are regulated by the legal framework and are carried out in accordance with a number of regulations and local laws (Regulation of the FSBEI HE CSPU on the organization of part-time students' practice, Regulation of the FSBEI HE CSPU on the organization of full-time students' practice, etc.). According to the requirements to FSES HE organization of practices, the university independently develops and approves documents, regulating the organization of professional and practical education,

taking into account the Bachelor's training characteristics, including practical working programs in various kinds of practices.

Two types of practical work are used to develop professional competencies in the process of specialist training: educational and practical training (including pre-graduation). Types of practical work and their names are described in the curriculum approved by the Academic Council of the University.

Initially the academic staff of the Special Pedagogy, Psychology and Subject Methodology Department trained specialists only for the regional special educational system, and now providing social security for their graduates considers a real job opportunity for the future speech therapists and special education teachers, training them for the realization of their professional activities in conditions of educational establishments, realizing the principles of the inclusive education. Therefore, educational establishments realizing both general educational and adapted educational programs are chosen by the heads, responsible for practical work of students, as the basis for practical training. Principles for choosing establishments for the practical work are: the level of professional competency of the administrative and teaching staff, financial support of the educational process, ability and willingness of the educational establishment staff to exchange its experience with the students and to collaborate with the

university, which in turn is the basis for conclusion of contracts for practical work between the university and the establishment for practical work for the period up to five years. By this moment, the academic department has signed 28 cooperation agreements with educational establishments for bachelors' training.

Variability of establishments for practical work and a wide range of institutions willing to cooperate with the graduating department in the organization of practical training can significantly extend the opportunities to provide educational services to the students. Educational organizations realizing both general educations and adapted educational programs are suggested to the students as the basis for their practical training. At the final conference, faculty students present their group mated the organizations where they had their practical work, and introduce the educational organization foundation history, current state and general characteristics. Thus, professional competencies in the organization of correctional and developmental education environments, as well as the realization of corrective and pedagogical activities in educational, healthcare and social protection institutions (which affect the principles of integrated and inclusive education) are formed in students.

Despite the fact that the high school mainly educates the students who have high motivation in working with disabled

children, those students - before starting their practical work - usually have neither relevant interaction experience with a designated group of children, nor an adequate understanding of such schoolchildren. It is the practical work which gives the students real information about disabled children and their personal characteristics, and most importantly, about the possibility of providing remedial assistance to every child in need. One of the active areas of the teachers of the Special Pedagogy, Psychology and Subject Methodology Department is development and publication of study guides, which are aimed at developing students' competency in the inclusive training and education of children with health limitations:

- Understanding the essence of the inclusive education and its differences from traditional forms of education;
- Knowledge of laws and regulations regarding the inclusive education of persons with health limitations;
- Knowledge of psychological mechanisms, psychophysical and personal development, education opportunities, needs of people with health limitations;
- Knowledge of organizational and purposeful educational characteristics of disabled children in terms of the inclusive

educational environment, knowledge of typical models of the inclusive education;

–Knowledge of psycho-pedagogical and didactical designing methods of educational process, designing and evaluation methods of the inclusive educational environment;

–Ability to realize different methods of pedagogical interaction between all the subjects of the educational environment (individuals and groups, parents, colleagues, specialists, school authorities) concerning the education of a child with health limitations;

–Inclusive culture comprehension: willingness to organize educational activities that promote a tolerant attitude towards people with health limitations; willingness to discuss and set the main goals, values and principles of inclusion.

To develop students' professional competencies, the academic staff of the faculty developed and issued some special materials on general and methodological problems of the inclusive education, regulatory and legal support of education for children with health limitations, various branches of correctional pedagogy and psychology, reflecting the inclusive education technologies for different categories of persons with health limitations, organization of special work with children, social work, didactic support

(monographs, school books, training manuals and guidelines for specialists, teachers, parents, children with health limitations, articles in periodicals and collections of research papers devoted to the problems of special and inclusive education).

Full methodological support of the future professional activity of the teachers who realize the inclusion practice will allow improving the educational quality for children with health limitations in various educational establishments. The complex of methodological guidelines highlights the priorities and requirements for the effective inclusion of different groups of children. The authors present the legal basis for the organization of integrated education and inclusive process, basic regulations and local acts, which allow organizing a continuous inclusive educational vertical for a child with health limitations. The necessary summary sheet of requirements for inclusive education in educational establishments was also offered.

The experience shows that the preparation of students to carry out professional activities in the field of inclusive education is a complicated and comprehensive process. The presence of special educational needs in children assumes the teacher's ability to solve developmental, preventive and corrective tasks. This, in turn, stipulates the necessity to develop future teachers' competencies in rational choice of methodologies and techniques, taking into

account the characteristics of children with health limitations. With the express purpose, teachers of the department worked out a series of teaching aids to be published, entitled Inclusive education for children with health limitations. The main idea of these teaching aids is to teach innovative educational technologies to the students in the context of forms of the competency-based approach and models of special education services for children with health limitations, including those with disabilities.

The manuals highlight the features of psycho-physiological and personal development of different categories of children with health limitations, specifics of education and training of children with health limitations in terms of the inclusive educational environment, methods of psycho-pedagogical support of a disabled child in terms of educational organization, and psycho-pedagogical and didactic designing methods of the teaching process. A number of educational and teaching aids present materials that allow students of pedagogical universities to get an overview of disabled children category of (pre-) school-age, and develop an understanding of the possibilities of their inclusive education.

To date, the academic staff of the department has developed educational technologies aimed at personality development, correction of secondary deviations in the development of children with health limitations. These technologies consider the aspects of

developing children's understanding of the subjects surrounding them in terms of the inclusive education; the ways and means of intensifying their cognitive and verbal development; organizational and informative components of teacher-centered and individual work with children from this category; and also offer lesson notes. Distinctive features of studying teaching aids which describe these technologies are the following: role strengthening of the students' individual work, focusing on development of student's creativity, ability to analyze and select literature necessary for professional activity, and use this information to ensure the individualization and differentiation of psycho-pedagogical support of disabled children in terms of inclusion.

One of the most important sources for the development of the core competencies is the guidance papers developed by the teachers of the course schedule department (Koroleva, 2015; Lapshina and Zherebkina, 2011; Osipova, 2011). Some of them were written by the correction pedagogic graduates currently working in educational establishments for pre-school-aged children with health limitations. These guides provide practical and didactic materials for teaching schoolchildren with health limitations (developmental delay, mental development disorder), education programs in curriculum subjects of special education establishments, type VIII, controlling and diagnostic tools to account the results of learning skills of children with health

limitations. These materials were developed in accordance with the requirements of international educational programs.

The following options were proposed: final tests in mathematics, the Russian language and reading for elementary school children; variants of complex tests for the children of primary school age with mental delays who study in a public school, taking into account the realization of the FSES; variants of special psycho-educational programs to work with children of primary school age with mental delays, taking into account the realization of the FSES in elementary school. Students can get familiar with the variety of games and exercises which can be used by disabled children of school age in classrooms and within non-school activities, considering the specifics of their behavior.

The graduates of the pedagogical universities should be competent when supporting psycho-pedagogical processes of socialization and professional self-determination of people with health limitations. For this purpose, teacher school books were developed, which contain materials on the problem of socialization of children with health limitations and socio-cultural rehabilitation of adults with disabilities. They also contain information concerning theoretical, methodological and general psychological approaches to the socialization of children and teenagers. The experts consider the low cultural and educational status of parents

to be an obstacle for disabled children integration and socialization. Therefore, a graduate who has mastered the Bachelor program must be ready to provide psychological and pedagogical support to the families of persons with health limitations and interact with the nearest network concerned. Teachers of the department have prepared more than 20 teaching aids and recommendations reflecting the work specifics with parents of children with health limitations of different categories.

Teaching aids, which were developed by the academic staff of the department and which consider new possibilities of children-parents interaction, are provided to the students for self-education, fulfilling of individual assignments and group projects, as in requirements for verbal and general psychological development of an early-aged child and core competencies for creating verbal communication environment within the family of an early-aged child; issues of mental, labor, physical, aesthetic and moral education of children with health limitations; ways and means of involving parents into correctional and educational process; matters of parents' assisting in creating conditions for carrying out any practical activity, especially education one, etc. These teaching aids include a wide range of practical materials: lesson notes, games and exercises descriptions, examples of training assignments, which contribute to the development of children perception, attention,

visual memory, brainwork, the motivation for an educational activity, development of self-service skills and motor activity, etc.

4. CONCLUSION

It should be noted that the system of the competency-based approach implementation enhances the efficiency of bachelors training in the realization of professional activity in the field of inclusive education. Therefore, our graduates initiated the centers like Special Needs Child and Special Children Health Center, which realize the inclusive education in their working activities. A high level of developed professional competencies allows the graduates to provide qualified correctional and developmental assistance with regard to individual psycho-physiological characteristics of all categories of children.

REFERENCES

- DRUZHININA, L. 2003. **Ponyatie individualnogo i differentsirovannogo podkhoda k obucheniyu i vospitaniyu detey doshkolnogo vozrasta, Notions of individual and differentiated approaches in education of pre-school children.** Bulletin of the Institute for Education Development of the New Generation at SCPU. pp. 140-147. Russia.

- DRUZHININA, L. 2012. Sovremennoye sostoyaniye problem okazaniya individual'noi korrektsionnoi pomoschi doskol'nikam s narusheniyami zreniya, Modern state of individual correction and assistance to pre-school children with visual disorders. Bulletin of Samara scientific center of RAN. Vol. 14. N^o 2: 1466-1473. Russia.**
- ERMAKOV, D. 2009. Pedagogicheskaya kontseptsiya formirovaniya ekologicheskoy kompetentnosti uchashchikhsya: avtoref. d-ra ped.nauk [Pedagogical conception of forming the ecological competence of students: abstract of Doctoral (Pedagogy) thesis. Moscow, Russia.**
- GUSLYAKOVA, N., ZHEREBKINA, V., and LAPSHINA, L. 2005. Psikhologo-pedagogicheskaya praktika v shkole [Psychological-pedagogical probation at school. CSPU. Chelyabinsk. Russia.**
- KOROLEVA, O. 2015. Volonterskaya deyatelnost kak sredstvo formirovaniya professionalnykh kompetentsiy u buduschikh defektologov volunteering as a means of forming professional competences in future defectologists. Cicero. Chelyabinsk. Russia.**
- LAPSHINA, LM and ZHEREBKINA, VF. 2012. Pedagogicheskaya psikhologiya [Pedagogical psychology]. CSPU. Chelyabinsk, Russia.**
- OSIPOVA, L. 2011. Prakticheskiye zanyatiya v biblioteke dlya slepykh kak aktivnaya forma raboty s buduschimi tiflopedagogami Practical lessons in a library for the blind as an active form of working**

with future educationalists working with the blind.
 In: Osipova, LB and Antropova, NV *Pedagogicheskoye obrazovaniye: sovremennoye sostoyaniye i osnovniye napravleniya nepreryvnogo pedagogicheskogo obrazovaniya* [Pedagogical education: main areas of continuous pedagogical education. Cicero. Chelyabinsk, pp. 210-214. Russia.

VASILIEVA, S. 2015. **Sovremenniye podkhody k formirovaniyu kommunikativnoy kompetentsii pedagogov, rabotayuschikh s detmi s osobymi obrazovatelnyimi potrebnostyami** **Modern approaches to forming communicative competence in pedagogies working with children with special educational needs.** In: Prihodko, OG, Solovieva, IL (eds) *Osobyete deti v obschetsve* Special children in a society, pp. 29-33. Russia.

VASILIEVA, V. 2015. **Methodological bases of pedagogical concept of development of communicative competence of teachers of preschool educational establishments.** Works of the III International Scientific Conference education and science without borders and II International Scientific Conference (08-13 November, 2015, Munich). International Journal of Applied and Fundamental Research (ISSN 1996-3955), 2. <http://www.science-sd.com/> 461-24913. Russia.

ZEER, E., PAVLOVA, A., and SYMANYUK, E. 2005. **Modernizatsiya professionalnogo obrazovaniya: kompetentnostniy podkhod** [Modernization of professional education: competence approach]. Moscow Institute for Psychology and Society. Moscow. Russia.

ZIMNAYA, I. 2004. **Kluchevye kompetentnosti kak rezultativno-tselevaya osnova kompetentnostnogo podkhoda v obrazovanii** [Key competences as result-target basis of competence approach in education]. Issledovatelsky tsentr problem kachestva podgotovki spetsialistov. Moscow. Russia.



**UNIVERSIDAD
DEL ZULIA**

opción

Revista de Ciencias Humanas y Sociales

Año 34, Especial N° 15, 2018

Esta revista fue editada en formato digital por el personal de la Oficina de Publicaciones Científicas de la Facultad Experimental de Ciencias, Universidad del Zulia.

Maracaibo - Venezuela

www.luz.edu.ve

www.serbi.luz.edu.ve

produccioncientifica.luz.edu.ve