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Kola Nut and Conflict Resolution among the *Igala* People of Kogi State, Nigeria

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Abstract

This paper examined Kola nut and Conflict Resolution among the *Igala* people of Kogi State, Nigeria. In a world ravaged by conflicts, certain Africans have kept the fire of brotherhood, through the breaking and eating of Kola nut. Literatures exist on Conflict Resolution, but no empirical study on the topic in question. The aims are to examine (a) the types of Kola nut cotyledons and its relevance in conflict resolution (b) the myths about Kola nut that enhances conflict resolution, and (c) its role in conflict resolution. The qualitative approach was adopted. The sources of data were primary and secondary. The Primary Sources included 20 oral interviews. Purposive sampling was adopted. Content analysis was used to analyse. The secondary sources included books and an unpublished work. The findings reveal (a) two types of Kola nut, (*cola acuminata* 0-7 cotyledons and *cola nitida* 2 cotyledons), (b) As regards the myth, it is used to invite and welcome the ancestors during conflict resolution, whosoever harbours grudges against a neighbour after the kola had been eaten will come under the wrath of the ancestors, and (c) It is the harbinger of peace. In conclusion, peace can only be guaranteed when there is security and justice, which could be embedded in a unifying factor(s), like the kola nut. Any community that finds this generally acceptable factor will experience a considerable level of peace, especially when acculturated into every aspect of the modern conflict resolution mechanisms, putting into consideration the indigenous socio-religious conflict resolution strategies.

Keywords: *Igala* People, Kola Nut, Conflict Resolution, Peace, Fraternity Brotherhood, Ancestors *(Ibegwu)*.

Introduction

The tradition of kola nut dates back to antiquity in the various cultures of West Africa, Nigeria, Kogi state and the Igala nation. Indeed, from time immemorial there is no cultural symbol that equals it in significance in Igala land. It will be a very high pedestal of folly to plan any meeting or gathering without the kola nut, no matter the amount of food, drinks or meat available, such an occasion will only end in futility; and indeed a mocker.

The aims of this study are to examine (a) the types of Kola nut cotyledons and its relevance in conflict resolution, (b) the myths about Kola nut that enhances conflict resolution, and (c) its role in conflict resolution. This is geared towards the achievement of the primary purpose of developing conflict management patterns that takes into consideration Africa's socio-religious conflict

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management methods, capable of solving contemporary conflicts in Africa, especially those which has become impervious to the western conflict management strategies.

It is therefore, a clarion call for Africans to look within, because if Africa must solve her numerous conflict, she must look within, for the solution to Africa's problems lies within Africans and in Africa. Bob-Manuel made this point clear when she noted: *"if Africa has to put the falling apart together, her original values must be revisited"* (Inebe, 2000). It is therefore, imperative to understand that just as people's faces, societies, cultures, and food differs, that is how their conflict management strategies differs. Copying another society's conflict management pattern and trying to forcefully or persuasively adopt it into another society will only amount to injustice, a fairly better result; will be to have a hybrid pattern and not destroying one completely, to establish the other.

In another dimension Iyere wrote in details; The Socio-Religious Significance of *Obi* (kola nut) among the Igala people of Kogi state (Iyere, 2011). This article described in depth the Kola nut tradition among the Igala. It is upon this article by Iyere this work is empirically based. In this treatise, He was able to unveil to us the roles and significance of kola nut to the Igala community. This otherwise means that kola nut is an indispensable object of ancestral worship or traditional ceremonies rites; such as marriages, and sacrifices. He concluded by saying that in the Igala community, *Obi* (kola nut) is an important item for welcoming a guest to a place which signifies, love, friendship, hospitality, peace, unity and acceptance. He stated the need for the mass media to come and showcase the Igala rich cultural heritage. The major focus of Iyere's work was on the socio-religious importance of kola nut, and its general role in the *Igala* society. The focus was not diverted to the details of conflict resolution, with the sole aim of taking into consideration the indigenous socio-religious conflict management pattern of the people, neither bearing in mind the purpose of developing, and introducing new conflict management strategies that are African in nature, which would tackle the contemporary conflict management challenges faced by African states.

Over the years these conflicts have become impervious in nature to the western conflict management strategies. William made this point clear also when he noted; *"in spite of the various interventions in African conflicts, such as the UN sending nine peacekeeping missions in the 1990s alone",* within the African continent itself, the Organization of African Unity, now African Union (AU) has sent special representatives of the secretary general to the conflict areas such as Congo in 1993. African conflicts remain impervious to these interventions (Zartman, 2012).

The failures of these missions were because the political, military and sociological realities of these states were not fully studied, appreciated, and understood. This therefore, creates the need to look inward and develop, strengthen, and introduce new conflict management strategies that will take into cognizance the indigenous socio-religious conflict management pattern of the people with the bid to developing brand new conflict management strategies, that are African in nature and capable of solving Africa's contemporary conflicts that have become impervious to the western conflict management styles. This gap led this researcher to carry out this study.

Kola nut being a member of the family sterculiaceae has a long history in West Africa. The use of kola nut, the major product of kola is intimately interwoven with the various cultures of the people of West Africa. Use of kola nut features prominently, in religious, social and ritual activities in West Africa, where they are used during ceremonies relating to marriage, child naming, funerals and in sacrifices made to the various gods and goddesses of African mythology (Opeke, 1982). It is also believed that; among the Igbo and the Yoruba, Kola nut is culturally very significant, and features prominently in socio-gift exchange. It also features symbolically as an item of consumption on even modern high-society occasions (Njoku, 2001). From the above, it can be deduced that the acts of ancestral worship and high societal occasions in African traditional system cannot be done in the absence of Kola nut and to a great measure, this act of worship is pivotal in the enhancement of peace, and conflict resolution in the community.

The kola nut is the seed kernel of a large African tree grown commercially around the world, particularly in Nigeria, Sri Lanka, Indonesia, Brazil, and other part of South America. It is extremely popular amongst the inhabitants as a caffeine-containing stimulant. The nuts are eaten whole or powdered and mixed with liquid for a drink. The kola nut is primarily derived from three species from the cocoa tree family: *Cola acuminate, Cola nitida,* and *Cola vera* which originate in tropical West Africa, but can also be found in pockets of Brazil and West Indies, where they were taken by the slave trade. The trees typically reach a height of 25 meters or 60 feet and its waxy oval

leaves frame cheerful star shaped flowers that are white or yellow with purple accents. Its fruit is pod-shaped, with each of which is nestled about a dozen roundish shaped seeds or kola nuts. The kola nuts may be red, white, or pinkish hue. (Once opened, the exposed seedpod's arrangement looks rather similar in its configuration to an armadillo's amour). The nut aroma is sweet and rose like; and the first taste is bitter, but sweetens upon chewing. The nut can be boiled to extract the cola (Nnenne, 2013).

The lore, history, reality, rituals paradigms and myths that guide the kola nut are evolutionary and as such, are in the main set in codification, oral history, and practice; than by conventions. Naturally there are assumptions variations, controversies and Miscalculations, norms vary from clan to clans, but the universality of the place, of kola nut in the Igbo tradition remains paramount (Ene, 2005). This illustration depicts the customs and traditions in Igbo land, which is also the same with the *Igala* community. There are many definitions of "conflict resolution". Most refer to an outcome or distribution of benefits acceptable to all sides. All focus on the facilitation of solution; however, different emphasis is placed on non-zero-sum rather positive sum win-win and consensus decision making, process, and outcome (Osimen, 2012). Conflict resolution could also mean changing reality either by reducing scarcity of disputed value resource, or by changing the casual factors that have made for antagonism and confrontation in the past (Maluwa, 1989).

Conflict resolution could also be viewed as an effort to increase cooperation among the parties to a conflict and deepen their relationship by addressing the conditions that led to the dispute, fostering positive attitudes and allying distrust through reconciliation initiatives and building or strengthening the institutions and processes through which the parties interact. Conflict resolution can be used to reduce the chances of violence or to consolidate the cessation of a violent conflict in order to prevent re-escalation (Lund, 1987).

Method

The qualitative approach was adopted. The sources of data were both primary and secondary. The primary sources included 15 key informant interviews (KII) and 5 in-depth interviews (II). The secondary sources included books, journals, and an unpublished work.

Participants

Purposive sampling was adopted to involve 15 of those that play prominent role in conflict resolution in the community, and 5 of those whose disputes have been resolved through the use of the Kola nut, making the total of 20 participants between the ages of 40-100. The key informant interviews included 7 traditional rulers, 4 community chiefs and 4 council of elder's members. The in-depth interviews (II) included 5 community members.

Data Analysis

Content analysis was used to analyse the data collected through oral interviews, as well as descriptive technique, which involves the description of the integral role of kola nut in conflict resolution.

Research Instruments

For the purpose of this study, an unstructured interview guide was developed. This allowed the interviewer to adjust questions and change direction as the interview was taking place. This was supported by a tape recorder and two research assistants, in order to avoid the likelihood of any kind of omission of any information that was supplied by the respondents.

Procedure

Approval was gotten from the Council of Traditional Rulers of the community in written form for the conduct of this research. Participants were also assured that the entire research is for educational and policy making purposes only, which could be of great benefit to the entire populace. This helped the researcher to get their full consent for data collection.

Results

(A) Descriptive Phase: *The types of Kola-Nut Cotyledons and Its Relevance in Conflict Resolution among the Igala*

This section deals with the relevance of the Kola nut in traditional conflict resolution. This Research reveal two types of kola nut, these are *cola nitida* (*Obi-Akechi*) and *cola acuminata* (*obi-Igala*). The *cola acuminata* comes in different cotyledons, but however, there is one without cotyledon *(obi-oduluku)*. It is called the seed of the spirit, meant to be eaten alone. There is one without cotyledons, each cotyledon has its significance in traditional settings as it symbolizes different things in the *Igala* Kola nut tradition and somewhere else in Nigeria. Attempt has therefore, been made to carefully outline the various kinds of cotyledons and its uses to the *Igala* people; pictorial views are also provided to give us a clearer picture of what the researcher mean. However, before we go into that let us take a look into this excerpt from one of my respondents at the field, which will be useful for our guidance:

Respondent 1:

"Normally, according to our tradition, the kola occupies a very significant place in any season of the year, it is a unifying factor, and its presence symbolizes peace, brotherhood and fraternity, although there are different cotyledons, ranging from 0-7 cotyledons in existence, it symbolizes different things, some are eaten alone, like the one cotyledon and some majorly for sacrifices and so on".

The table below shows some of the different types of kola nut especially *cola acuminate* which features prominently in social exchange, ceremonies, as well as divination, sacrifice, and inter-group reconciliations

Table 1. Kola Nuts Cotyledons, Types and Their Relevance.

S/No	Kola nut cotyledons	Type	Relevance
1		Kola nut with no cotyledon. It is very rare to find, it is called *Obi Odukulu* in Igala.	It is eaten by one person, it is not shared. It is used to wade off ones enemies or conflict. Seven broken pieces of brown sticks are stocked to it and put at cross-roads after some special incantation.
2		Kola with two cotyledons *(Obi-Pameji.)* Sometimes one cotyledons is yellowish, the other reddish. It is very rare to get. Its sometime called *danjaki*	It is used for good luck and purification of oneself *(Obi-ola-efe),* appeasing of the gods for offences commited. It is usually as a reconciliation between the living and the living-dead(the ancestors)
3		Kola nut with three cotyledons, it is called (*obi-Ogwu/Obi-Epameta)*. It is the chief of all kola nuts.	For good success, happiness, love and peace. It is eaten with seven alligator pepper *(Eyo-Ata Mebie)* It is also used for oath-taking, inter-group conflict resolution.

4		Kola-nut with four cotyledons *(obi-epamele)* it is very common. It is sometimes called, *(obi-ibegwu,)* ancestors kola-nut.	Presented at varying traditional ceremonies. It is commonly presented at traditional wedding. It is used by diviners *(Ama-bifa)* to know the will of the gods concerning a conflict, issue or how to avert evil.
5		Kola nut with five to seven cotyledons *(Obi_epamelu, Efa, Ibie)*. They are not common, not broken for eating at traditional meetings	They bring about big crises when eaten in a meeting. It is used as a valid tool for fighting one's enemies. This is usually avoided in meetings in order to avoid conflict.
6		It is called *(Obi Akechi, popularly called gworo, cola nitida)*. It usually comes in two cotyledons.	This type of kola nut is not recognized in *Igala* tradition, because, it is assumed that it does not understand the language of the ancestors

Source: Abah (2012).

(B) Content Analysis Phase: From the interview analysis, three themes emerged. These were as follows:

Theme 1: Symbolic Value of Kola Nut

Theme 2: Ritual Context of Kola Nut

Theme 3: Sacredness of Kola Nut

A detail treatment of these themes were offered in the discussion section.

Discussion

Symbolic Value of Kola Nut

From the findings, the kind of honour and sacredness accorded the Kola *(Obi)* is one that is unequal to any cultural or conflict resolution symbol. Myths in this study will be dealing with the people's symbolic beliefs about kola nut that enhances conflict resolution and why it is held in high esteem. Some of the myths as gathered from oral interviews are as follows:

Respondent 2: spoke on the myths about Obi that enhances conflict resolution:

"Actually, the beliefs existed before I was born, and the tradition was passed down to us, by our ancestors, to some other persons that do not belong here, it is just an ordinary fruit or an ordinary tree, but to us, it is the fruit of the ancestors, a sacred tree, I do not know why it is that way, but as long as it work to unite us, I do not see a problem with it".

a. It is believed that he who brings kola nut brings life: this particular myth means that whosoever brings kola nut rekindle the fire of love, unity, oneness and the life of the relationship. It could also mean the rebirth or birth of a new relationship.

b. Kola nut is an intermediary between the land of the living and the dead; hence, it could be used to settle disputes between the land of the living and the dead.

c.   Kola nut is the bible of our traditional religion: The African Traditional Religion cannot be practiced in the absence of Kola; this is because with it, invocations and incantations are made in order to gain access to the spirit world, it enhances communication between humans and their gods and goddesses, as well as their ancestors. When approaching the spirit world, Kola nut is like a key, which grants access.

d.   Kola-nut can break or mould relationships.

e.   It is not one of the expensive items for any occasion, but it is the most important, because in its absence; nothing can be done.

f.   It is believed that; its breaking, and eating, symbolizes unity, peace, love, and acceptance under the protective eyes of Ojochamachala (God almighty) and Ibegwu (Ancestral spirits).

g.   The keeping of the kola nut tradition means so much to the current generation; hence they see it as the keeping of the legacies or the ancient landmarks of their ancestors.

Ritual Context of Kola Nut

This section deals with the presentation, breaking and distribution of Kola nut. It is imperative because every part of the Kola nut ritual depicts harmonious living love, peace, and the act of conflict resolution.

(A) Presentation

The presentation of kola nut in any gathering is usually a ceremony that deals with the land of the living and the dead. This is because, the ancestor of the living are special guest in the presentation. It is (kola nut) an item that breaks limitation between the living and the dead to enable communication; as it is often regarded as the food of the spirit.

Respondent 3:

"In the culture of our people (the Igala's) the presentation of obi to a visitor is very vital, it is usually used to welcome the guest, the acceptance of the Kola by the guest is a sign that the guest is welcome and it eventual prayers and breaking of the Kola, and as well taking of water alongside symbolizes hospitality, love, acceptance, peace, unity, and fraternity. It shows that the visitor is welcome to the place".

As stated earlier, the traditional *Igala* people believe that the only language that *obi Igala* (*Igala* kola nut) understands is *Igala* language. Again, Iyere also captured the following beautifully in the course of his interviews; when he visited the chief of Anyigba (Ogohi Abu Okolo) in 2009 and he officially presented *Obi-Igala* to him, he prayed over it in Igala language as following:

"Ojo chamachala, Ami-Ibegwu wa obi me kadu me de imaje koju logbo ki domo nuonu wa imaje okpanachi onuwa. Adewa kpai-abili kite. Adewa kpai enwa kite efu ewo-I ojo kpai ibegwu kideju tewa Inah nu ajode kirah nu ilona".

Which means:

God almighty our ancestors, here is kola nut presented, may the reign of our chief be long; may his reign be full of progress for all; may evil spirits never bear us and may misdeeds be far away from this town. May God and our ancestors guide us. May good luck behold the hunter and the passer-by.

After the prayers, the *obi* (*obi Igala* with the three cotyledons) was broken into pieces by the traditional ruler. Before anyone is permitted to eat of the kola nut, a little part of the kola must be thrown to the floor; for the ancestor, saying "*Ibegwu obieme de*" (our ancestors, here is your kola nut). There is an adage in *Igala* that shows the importance of presenting a visitor with *obi*. It states "*ononojo kuma ma du omi nu mo nabe ko obi n ikineju ujenu n*" meaning a visitor who is not offered water or kola nut should not expect food (Iyere, 2011).

(B) Breaking

This section deals with the rituals associated with the breaking of the sacred seed (kola nut).

Respondent 4 noted:

"There are those that are qualified to break the kola nut in any gathering. In Igala tradition, the privilege of praying over and breaking of kola (Obi-Igala) is given to the oldest man in a group. However, the oldest man may delegate this privilege to a younger person (male) to perform the rite of praying over it, Obi ritual is taken seriously by Igala elders, who have not

been contaminated by western cultures. Wherever Igala people are gathered for an important occasion their Ibegwu (Ancestor) are also with them. In this respect, praying over and breaking of Obi should be taken seriously, so as not to attract the wrath of Ibegwu".

In a similar vein, respondent 5 noted:

A woman has no right to pray over and break *obi*, in any gathering of Igala people. It is, therefore, a taboo (*Elifo*) for an Igala woman to do this in the presence of an Igala man in any meeting. However, 'where Igala women are gathered for an occasion and an Igala man is in their midst the breaking of *obi* is done by him. The eating can be done by women. Only the female traditional priest can pray over and break the kola and offer it to her ancestors for consumption alone in her shrine.

From the position of respondent 3 and 4 respectively, it is an abomination and breach of ancestral laws to allow an unqualified person partake in the kola nut rituals; hence, priority must be given to those who are qualified to carry on the task in traditional meetings.

(C) Distribution:

The distribution of kola nut after it has been broken can be done by anyone, either a woman or a man and everybody can partake in its eating. When kola nut is broken the plate usually moves round for persons to partake in its eating. At this point if anyone refuses to take the kola nut, he or she is not in agreement with whatever they are doing. So, when it is discovered that some person(s) did not partake in the eating attempt will be made to find out why, and the problem will be given immediate attention as its sharing and eventual eating signifies acceptance, unity, love, hope, and happiness.

Sacredness of Kola Nut

The kola seed is believed to be a sacred tool for establishing a lasting peace alongside alternative dispute resolution methods like arbitration, mediation, third party intervention, even negotiation, and so on. So when disputes are being settled with the afore-mentioned alternative conflict resolution methods, it is further sealed with the presentation, breaking, distribution and the eventual eating of the kola seed. Africans have peculiar ways of resolving their conflicts and so conflict resolution in Africa had spectacular features uncommon in the global space. The notable feature of this conflict resolution stood Africans in the vantage position of demonstrating their culture and according it a radiant splendour and flame. This was why in pre-colonial African societies, peace and harmony somehow reigned supreme and often produced unique atmosphere for peace to thrive and development became dynamic. Hence, we shall take a cursory look at the indispensable role of Kola nut in conflict resolution, such as oath taking, group and inter-personal reconciliation, divination, sacrifice.

1.   Inter-personal and Inter-group Reconciliation

From the findings, like some other ethnic groups in Nigeria, the Igala people see kola nut as a symbol of reconciliation. When used during a peace meeting, if there is a dispute between persons, a reconciliatory meeting would be called. After listening to the parties involved, and useful pieces of advice have been given by the elders, *obi* is then brought, the *obi* is prayed over and broken into pieces by the person who is qualified to do so, the eating of the *obi* by the parties involved, and those present is a strong sign of forgiveness, peace, solidarity, and reconciliation. It is, therefore, expected that the reconciled parties that ate the *obi* should in no way harbor hatred towards each other. If anyone does he or she would incur the anger of *Ibegwu (*ancestors) who witnessed the reconciliation meetings.

2.   Divination

People go into divination to find out about the mind of the ancestors towards a particular conflict that is beyond them and how they could end or manage such conflict (s) using the wisdom of the ancestors. In doing this, Kola nut is necessary; because for the ancestors to speak to you, you must offer them their food, which is Kola nut as well as wine to escort it. In African Traditional Religion, the place of *Ifa* divination is unique; most traditional sacrifices are done after *Ifa* oracle is duly consulted through divination. *Ifa-ebo* (divination) is widely practiced among Igala.

According to respondent 6:

"Ifa divination is very powerful, it show us the way to go when we are without hope, ways to cure mysterious illness, avert impending doom, or calamity, it gives us access into the realm of

the ancestors that we may know their mind concerning an issue and kola nut plays an indispensable role here".

Divination is widespread in traditional Africa and even seems to appear as a common everyday practice, anything that happen must have invariably a definite spiritual cause. This belief makes the people to take divination seriously. People embrace the act of divination for the following reasons, these are:

▪ To find out and know about their future, destiny, wellbeing, and what may possibly happen to them, their family clan, or tribe.

▪ To gain access to communicate, and be in touch, and contact with the mystical and spiritual powers that can be tapped to meet their needs.

▪ To gain power confidence, assurance, and boldness to the challenge of life and triumph over them through esoteric and mystical.

▪ To overcome human limitations, finitude, importance, dependence, and contingency by knowing how they function and affect (Turaki, 2006).

There are many methods that *Abifa* (a diviner) uses for divination, some of them are: (a) *Ifa anwa* (divination with pods), (b) *Ifa ebutu* (divination with sand), and (c) *Ifa obi* (divination with four kola cotyledons). Our main concern here is *Ifa obi*, which some of Igala diviners employ to know the position of the spirit world about a given conflict or dispute. The *obi* with four cotyledons is the one normally used for divination. During the divination, he casts the four cotyledons on the ground. The falling of the convex side and concave side is read, interpreted in the same way as the *Ifa anwa* divination system (Okwoli, 1996).

Respondent 7 noted:

"During the process of divination the Abifa (diviner) often chew some seeds (three, seven or fourteen) of ata (alligator pepper). He spit the chewed ata (alligator pepper) on the dry kola cotyledons he uses for divination. This is to energise the spirit of Ifa for effective communication. It also spiritually empowers the Abifa (Diviner) to enable him to effectively decode the messages from Ibegwu (ancestral spirits)".

(C) Oath-Taking

Traditional oath-taking is a phenomenon in Igala traditional religion. It is the evoking of sacred and supernatural forces to be a witness of the truth of a statement or the binding nature of a promise. In another dimension, it is the invitation of the almighty God to punish anyone that commits a crime and tries to cover it up or it could be said to be an oath of allegiance, swearing that the gods or ancestors should punish you with death or evil if you go against certain agreement.

Here, *respondent 8* noted:

"Oath taking takes place in order to pledge allegiance, or to unveil secrets behind a particular evil, for instance, when a person dies a suspicious death, the family will report the case and the suspect to the court of the elders, if after enquiries and questioning, the person refuses to plead guilty to the charges, it is oath taking that will be used to settle the rest of the issue, if a person is having ill-feelings against family members or inter-group or group crisis or conflicts, parties will be called to order, through the breaking, sharing, and eating of the Kola nut".

Here are some occasions when *obi (*Kola nut) is used in oath-taking:

▪ Mysterious Death:

If a person dies after a protracted illness and some of the family members of the deceased suspect foul play, oath would be administered to the person or persons suspected to have mysteriously killed the deceased. The suspects are taken to either the deceased's grave or the grave of a senior member of the deceased's family. The kola nut with the three cotyledons popularly called *obi-Ogwu* is broken and kept on top of the grave.

Respondent 9 noted that:

"The suspects would take a piece of the Obi one after the other saying:

If I (mentions its name) is responsible for the death of the (mention the name of the deceased), let our ancestors kill me between seven or fourteen days, but if I am innocent, may the ancestors bless me and everything I lay my hands on and give me long life".

After the above swearing words each of the suspects would eat the piece of kola nut *(obi)* taken from the grave, it is believed, in *Igala* traditional circle, that if any of the suspects is involved in the death of the deceased, he or she would die within fourteen days after the oath taking.

▪ Agreement between parties:

If there is a business to be embarked on by two or more persons, oath taking would be administered, if there is fear of future betrayal by any of them. *Obi-Ogwu* would be used for the oath taking (*ebo-emo*). Each member would pledge honesty in the deal, and promise no cheating or betrayal. After the pledge the *obi* is broken and each member would take a piece and take a bit and give to other members. The eating of this *obi-ogwu* (three cotyledons) is significant because all the members will be honest to each other. Anyone who breaks the terms and conditions of the business would be visited by the wrath of the ancestors (*Ibegwu).*

▪ Suspicious of ill-feeling or hatred against a person:

If one feels that one's relation is harboring some ill feeling or hatred against him or her, the taking of oath with kola nut would take place. An elder in the family or a traditional priest would be called upon to witness the oath taking (*ebo-emo*) *obi ogwu* (kola with three cotyledons) would be brought and parties involved would say the following swearing words or similar ones as gathered from personal interviews;

Respondent 10:

"I have come here to swear today, that I have no ill-feelings against my relations here. If I do, may our ancestors strike me dead! But if my heart is clean, may the Almighty God and our ancestors protect, and bless me; I hereby eat this kola nut".

After the swearing words by the persons involved in the oath taking, the eldest person or the priest present would break the *obi* (kola nut) into pieces. Each of the swearing persons would take a piece of the kola nut (obi) and take a bite and give the rest to his or her swearing partners to eat. The eating of the same *obi* by the swearing persons ratifies the swearing rite. By this swearing with *obi ogwu*, it is believed in *Igala* tradition that the parties involved would not harbour ill feelings or hatred towards each other. If any does, he or she would be punished by *Ibegwu* (Ancestor).

(D) Sacrifice *(Ichebo)*

Whatever form of worship is done in the African society, is to enhance general societal peace and unity among members of the community. Thus when sacrifices are carried out, it is meant to enhance love, unity, progress, and sacrifice as an act of worship is a basic tool for peace building and conflict resolution. Most times, sacrifices are offered to cleanse the society and enhance peace and prosperity. Worship in African traditional religion is incomplete without sacrifices. And it is important to know that sacrificial life is not peculiar to African traditional religion alone for it is carried out in every religion across the globe.

According to Ringgren:

"All over the world throughout history, whenever mankind has worshiped divine being, there is the practice of sacrifice. The Babylonian suffer who gives a lamb to the gods to ransom himself from the sin which was supposed to be the cause of his suffering. The Mexican Aztee who kills a young man and offers his heart to the sun-god in order to secure the vital forces of the sun for his land; the Moabite Mesha who offers his son to his national god in order to win victory over the attacking Israel" [2 King 3, 27] (Ringgren, 1962).

Abimbola also opined:

"Sacrifice is a means to placate the malevolent power which he believe exist side by side with the divinities who are regarded as benevolent; it is also a means to provide the divinities and ancestor with food, for it is the duty of an individual to feed the ancestors and divinities he worships" (Abimbola, 1980).

Achebe was also able to show us the significance of *obi* in Igbo traditional sacrifice by saying;

"Near the barn was a small house, the medicine house or the shrine where Okonkwo kept the wooden symbols of his personal god, and his ancestral spirits. He worshiped them with sacrifices of kola nut, food and palm wine and offered prayers to them on behalf of himself, his three wives and eight children" (Achebe, 1980).

Sacrifice is therefore an essential part of *Igala* traditional worship and *obi* is one of the valuable items used for sacrifice. Kola nut is broken into pieces before usage or used as a whole in sacrifice. Findings reveal that the kind of kola nut preferred for sacrifice by the ancestors is the one of four, five, or seven cotyledons, depending on the kind of sacrifice and it is the chief priest that reserves the right of breaking the kola nut meant for the ancestors, this responsibility cannot be delegated.

Limitations

Despite the research gap this paper filled, so much more can be done to harness more from the sacred seed. For example the economic aspect, if well harnessed would yield greater economic dividends. Furthermore, in spite of the caffeine content of the kola seed, empirical researches would also reveal some medicinal values. The tradition of Kola nut varies in different communities, it could be revisited with the purpose of developing new strategies to tackling modern conflicts. It will be useful for future studies to document the indigenous socio-religious conflict resolution strategies and apply quantitative measures to demonstrate their relationships with modern trends of conflict resolution strategies.

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RESEARCH ARTICLE

Modernization of Education as a Condition for Development in Ukraine: A Position Statement

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Abstract

In this article, the influence of the process of modernization of Ukraine's Education is exposed with respect to the development of human capital. Modernization of education is one of terms of development of economy of the state, and therefore requires changes and transformations according to the requirements of market, tastes of consumers, level of development of scientific and technical progress etc. It is certain that education is one of basic factors in nation building.

Keywords: Education, Educational Component of Human Capital, Modernization of Educational System, Ukraine.

Introduction

At present, the Ukrainian society is going through difficult and critical period of its development. Over the past twenty years, the economic and political system of Ukraine have radically been transformed. Cultural norms of society have changed. Currently, the ideological tenets that determined the development of the country for decades appear outdated, and therefore, Ukraine faces the challenge of a new orientation of social evolution, economic and political models and institutions that will meet the requirements of modernity. That is why this paper pays attention on modernization concept as one of the most popular among the modern doctrines of social progress.

Modernization should bring our country to new horizons of development that involves the transition from industrial to postindustrial development of the society. The end of such transition is an information society. The basis of an information society is the building up of a potentially inexhaustible intellectual human resource. These processes involve the development, establishment and implementation of human capital, particularly its educational component. This affects the development of the economic potential of the country. Perhaps, this is a reason why all countries coming out of crisis are trying to develop their human capital upon realizing its value and importance. At the same time, it should be noted that a person is not only the Creator of material and spiritual values, but also the Supreme value of the modern world. So, as you can see today the production and transfer of knowledge to the person come at the forefront. That is, the development of his intellect; the capacity of human capital at the individual level.

Therefore, the modernization of the educational system with the main objectives to ensure the quality, availability and efficiency, is an acute and urgent problem of our time. The purpose of

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this study is to determine the influence of the process of education modernization in Ukraine on the development of the educational component of human capital.

The Role of Education in Economic Development

One of the main subjects of strategic management of human resources, including education, supports education and science. Therefore, the question of developing educational and research strategy in the context of European integration is a necessary condition for innovative development of our state.

In Ukraine, just as any part of the world, the role of education in economic development increases the implementation of socio-economic transformation. This is why so many scientists consider human capital as the most valuable resource of the postindustrial society. That is more valuable than natural or accumulated wealth.

In the XXI century, under the conditions of strengthening the processes of globalization and integration social-economic development, the future of each country is mostly governed by the presence and usage of humans' capital in the country. That is why the implementation of humans' capital theory in different spheres of science, designed by T. Schultz and T. Becker in 1960 sixties (Schultz, 1993; Schultz, 1961; Becker, 1962) is so actively acknowledged.

Implications of the Theory of Human Capital on Education

The theory of human capital already acquired finality of scientific teachings, and in some places has become a powerful ideology of public and private investment in the economy of man, the economic basis of the global concept of human development. Nowadays humans' capital is distinguished as already formed in the result of investment of mental vocabulary, skills, competences, motivation, and health. This is purposely used in different spheres of social processing, thus, encouraging the growth of labor productivity and as a result influences the increase of profit (people's earnings).

However, Ukraine's education is now failing to be perceived as a branch of non-productive consumption. Rather, it is treated as investment in the educational component of human capital. A lot of scientists devoted their researches to this actual problem. For example the perspectives of humans' capital reproduction were analyzed by S. Klymko, V. Lych, L. Lynch, N. Ushenko. The projects of V. Bazylevich, D. Bohynya, N. Verhoglyadova, N. Golikova, Z. Griliches, O. Grishnova, I. V. Kuzmenko, B. Danylyshin, S. Dyatlov, N. Tyuhtenko, L. Shaulska and others are devoted to scientific-practical fundamentals of humans' capital formation on personal level (Lynch, 1989; Griliches, 1996; Grishnova, 2001; Kuzmenko, 2009).

The accentuation of consideration on the peculiarity of building up social and personal capital in the spheres of human's productive activity is dictated by the real-world effects, where the apprehension that his/her professional activity is a key to dynamic development and marketability of the country. The level of formation of specialists' humans' capital educational component is one of the basic criteria of line personnel's professional promptness for labor activity in the context of market environment. As noted in the White book of Ukrainian National Education, nowadays it is not enough when the result of study are knowledge, proficiency and skills, *"this list is supplied by the number of competences, that are factually characterized by the diverse, greatly wider realization quality of person"* (Aleksyeyenko, Anishhenko, & Ball., 2010: 244).

Accordingly, Ukrainian society's attention increased to the educational system as the basis of production capacity. Educational potential is the independent object of innovation. In effect, its capacity should be one of the priority objectives of the implementation transition on innovative model of market economy.

At the same time, higher education in Ukraine does not affect on the growth of individuals' personal incomes. The reasons for this situation lie in the fact that education in Ukrainian universities is not competitive. Unfortunately, the level of education of graduates of Ukrainian Higher Educational institutions is low and not competitive on both the domestic and external labor markets. According to the ranking of the top universities in the world; *"QS World University Rankings® 2015/16"* [the British company - Quacquarelli Symonds], among the top 500 are only two Ukrainian universities: Kyiv National University. Shevchenko [421-430 point] and Karazin Kharkiv National University [491-500 point] (Quacquarelli Symonds, 2015).

Need for Modernization and Ukraine's Present Education

Due to the low quality training of specialists, the reputation of our universities is not at a satisfactory level, and hence the attractiveness of our education to foreign and domestic entrants in the vast majority of pedagogical universities is quite low. In the modern world, the modernization of education is one of the conditions of economic development of the state. As a result, all developed countries are following this path.

These developed countries have been able to change the system of education in accordance with market demands, consumer tastes, the level of development of scientific-technical progress, etc. Most post-Soviet countries are in the stage of reforming the educational system according to the planned dimensions. Unfortunately, this process is not effective enough.

Educational reform should be aimed not only at a fundamental change of the existing educational system, but to update the principles, content, and approaches to education especially with respect to the enhancement of educational and vocational training. In essence, it is the process of modernization of the educational space that must help to solve problems in social and economic spheres in Ukraine.

Factors affecting the objective transformation of the Institute of Education in the modernization of the Ukrainian state are: (i) a high level of development of current social institutions in Soviet times; (ii) the high inertia of the educational system; (iii) the limited modernistic resources that meet the requirements of the post-industrial revolution; (iv) the important role of education in building human capital of the state; and (v) the growth of social mobility and youth activities, inclusion in various educational spheres.

I believe that the basis of changes in the educational environment should be based on a 'principle (– less), but a better perspective'; that is, a new but practical system of education. In Ukraine, specialists working to improve the quality of the education should ensure their effective use, the accessibility of education for different social groups and territorial groups of population. They should also look at the expanding the freedom of choice in the way of education and its content, ensure high quality educational services, guarantee the continuity of the process of education and professional development, and also aid the transition to the open educational system.

From some studies, a segment of Ukrainians, who have higher education still may be at risk of failing to match the job market. Given this and other factors, the modernization of education should be aimed to the basic principles of a market economy, the transformation of education into an important resource for personal, community and national development. Modernization of education should also aim at the implementation of important resource for citizens, society and state values. Education must also be socially and economically efficient. The common interest of the country, production and workers is to ensure adequate quality of human capital. This interest is best achieved through the modernization of the educational system (Aleksyeyenko et al., 2010).

Throughout the years of Independence, the Ukrainian society is still in the state of 'general system transit – transfer to new qualitative level' in all spheres of life activity. The process of system modernization of policy, economics, education and civic life of Ukraine foresees consolidation of state, society and resources around common values, aims, actions and ideas. One of the main priorities of Ukraine, in the sphere of external policy is the realization of the state strategy for European integration which is based on the declaration by the Ukrainian people. This is the real place of our state in the system of international relations and world educational space, carrying out Ukrainian European integration plans in accordance with new realia.

The Problem of Reforming Education

Concerning the problem of reforming the educational branch, in the context of united European educational space, it is necessary to mark that Ukraine has positive experience of the realization of Bologna process on international, national and institutional levels. At the same time there are still a lot of problem questions. These questions focus on areas such as; (i) the recognition of Ukrainian specialists on international level, (ii) the close contacts with educators and scientists of European countries, (iii) the achievements of European level of higher education appreciations to some quantity and quality indicators, (iv) realization of educational tasks from positions of new paradigm of Ukrainian education, (v) the search of optimum conformity between Ukrainian traditions and modernization of educational system in the context of Bologna process, and (vi) the

preservation and grafting of the best traditions and experience of native pedagogues in educational environment and so on.

All the mentioned processes demand the political figures to work out the possibility of making the legislation of Ukraine's educational sphere a European one. Also, it must foster the creation of effective legal system which corresponds to general recognized rules of system of the European Union. To our minds, integration of Ukraine-European community opens new possibilities for its development, under condition of inculcation of new non-traditional ways of solving of sharp problems of modernization of all spheres of civic existence, education.

Merits of Education in the Scope of Modernization

As global record shows, investments in education always influence effectively the social and economic development of a country. Today, the determinant factors concerning the rate of economic growth are:

1. speed and scales of development of priority directions for the development of science and technology;
2. level of training for workers of all levels;
3. grade of progress as a means scientific and manufacturing work.

Results from researches showed that there was strict connection between getting of higher education by citizens and their participation in civic life and other socially significant activities. However, social and cultural benefits of higher education favoured not only social situation but they had concrete economic effect. The social role of education and its positive influence on growth of economics affect wide circles of scientists of different directions: economists, sociologists, pedagogues, historians, doctors, specialists of technical sciences and so on.

Nowadays, _"intelligence is not in volume of kept in memory knowledge of different disciplines, but is in mastering of general system of orientation in ocean of information, in creation of tough individual "filters", strict means, of choice of valuable (first of all for personality) information. The main is – to know how to find need knowledge"_ (Kremen, & Ilyin, 2012: 7-8). It is high time to mark the fact that changes of political, civic, state, economic and other demands to leavers of higher educational establishments. There should be reorientation of approaches in the process of forming educational space of higher educational establishments with the different historical times.

It is possible to explain changes in teaching plans, methods of teaching, and so on by taking into account the realities. O. Grishnova points out that the _"level of education (knowledge), professional training (habits, skills, experience of work, professional conformity and professional adaptation), level of health, economically significant information motivation, and mobility of worker are components of human capital"_ (Grishnova, 2001). In the XXI-st century modernization of Ukrainian educational space takes into account conception of synergy.

Need for Synergy in the Modernization of Ukraine's Educational Space

Synergy can be considered as a universal scientific approach. Concerning the problem of using the ideals of synergy in pedagogy, it is important to emphasize that the main phenomena, where it focused its attention of pedagogy (individuality, man, freedom, development, education, creativity) were synergetic according to their essence.

Synergetic methodology brings new guidelines in pedagogical theory. Synergy essentially reinforces the positions of those scientists who receive and interpret the world in dialectical way. Moreover, synergy as interdisciplinary branch of knowledge helps to realize a lot of problems. Thus, as systematic and synergetic notions, it is possible to determine teaching and upbringing process, management by teaching establishment, system of continuing education, individuality and so on. So, for example, giving description of personality of a pupil, a student or a pedagogue as systematic and synergetic formations, it is high time to mark that personality is a complicated system – every man is complicated and unique; open system – ability to change information in a free way; decisive system – possibility to exist as well as physically and spiritually only under condition of change of information in environment; system of different importance – existence of processes of change between essencial forces in the structure of individuality; non-linear system – ability to self-activity, self-development, self-upbringing. Consequently, pedagogical synergy is the

branch of pedagogical knowledge which is reflected in theory, principles and conformities to the natural laws of self-organization within pedagogical systems.

An important way of transforming the national educational space is by organizing the system of education. This will be possible through the reconstruction of system of training competent specialists at teaching establishments of Ukraine. Consequently, this has been one of the main reasons why Ukrainian scientists carry out a lot of researches, learning world experience and experience of historical development of Ukrainian system of education.

Developing Human Capital in Ukraine's Educational Space

To develop the human capital, the following themes ought to be looked at: (i) changes of principles and strategies for developing the education of Ukraine in the context of theory of human capital; (ii) the influence of social, economic and financial aspects on development of human capital in the system of professional teaching of specialists; (iii) the content, forms and methods of forming of educational component of human capital; (iv) the problems and ways of reconstructing the educational system of Ukraine vis-à-vis the integration in European educational space; (v) the contemporary state and perspectives of professional teaching of specialists to appreciate the theory of human capital.

In substance, the term "competence" outlines the conditions, not only for already existing labour power, but directly appeals to the way of training of future specialists in different fields. That is why it is clear that, speaking about the building up of educational component pedagogical cadres within the human capital frame, it is impossible to ignore the professional competence of a teacher. It is one of the qualifying factor of the given process in the system of continuous education. A recent study had shown the direct concern of providing and enhancing the system of teachers' training to focus on building specialized professionals (Sarfo, & Adusei, 2015).

As it can be observed from previously cited evidence that the development of educational processes within the context of professional competences require the specific ability of the specialist to perform definite activities in specific fields (Sarfo, & Adusei, 2015). Consequently, the formation of the 'pedagogic humans' capital educational component' is one of the needed decisions to raise the quality of labour specialists' training. It is clear that, professional training as a gradual system of training must provide labour market with qualified specialists.

The intensive development of new scientific standards sets new and more difficult requirements for qualified specialist in terms of modern education. On the basis of theoretical analysis of scientists' researches, I made a conclusion that the term "competence" is wider then "qualification" as it comprises not only of professional knowledge, skills and experience in some specialty. Rather, it also comprises of the motivation to a deal creatively and effectively in the usage of knowledge and skills, the holistic personal qualities needed for achieving result, and the real ability to achieve the aim at a certain working place.

Professional competence is characterized by such elements of activity such as: (i) the analysis of working results and technological processes; (ii) the analysis of professional situations and problems; (iii) the analysis of technical documentation of activity aims; (iv) the organization of work; (v) the fulfillment of technical and technological conditions of execution; (vi) the coordination of ways of professional activity; (vii) creating of professionally efficient information about the object of activity; (viii) projection of typical and outstanding productive situations; (ix) providing of safe working conditions; (x) the acquirement of supplementary qualifications and professions; (xi) providing of high level working culture; (xii) the fulfillment of the rules of exploitation of field facility; (xiii) the absence of rejection; (xiv) well-timed elimination of technical and technological failures; and (xv) the fulfillment of recommendations, norms and demands of physiological, psychosocial, economic, ecological and ergonomic factors.

Integrating the two notions ("competence" and "qualified specialist"), a teacher should have high level of human capital development that is characterized by the ability to solve the tasks in different spheres of life on the basis of theoretical knowledge, practical skills and experience.

Summing up, it must be stressed that education today should be considered as the basis of modernizing the society, nation and state. At the same time in, countries such as Ukraine should continue to perceive education as one of the spheres of the national economy. In reality, although modernization of the society is based on the educational system, the education of the society itself needs modernization and substantial and structural updating in order to carry out this mission.

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RESEARCH ARTICLE

Dostoevsky's Shadows

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Abstract

In this paper, I bring to light Jung's Shadow archetype in Dostoevsky's works and also analyzes their implications in the structure of his characters. Taking into account that the Russian writer's creation is vast, I shall select a limited number of his works, namely 'The Possessed'; 'Crime and Punishment'; 'The Brothers Karamazov'; 'Notes from Underground' and 'The Double'.

We are all burdened with our Shadow and must strive to overcome it, but what happens if we fail or never even try to master it? Raskolnikov's attempt to free himself from the chains of his Shadow was too late, he had already committed the murder, but not in vain, he succeeded in redeeming himself, and so his effort must be taken into account. This does not help him to avoid the punishment, but offers him a chance after serving it. On the other hand, Smerdyakov's case is different: he made no attempt to overcome his Shadow, the only argument that he brought in his favor being that he acted fuelled by the desire of fulfilling his brother's wish. It is clear that, he has no chance for a better future and the fault lies with him because he did not create that chance. Dostoevsky's characters always seem to be ruled by a tragic destiny, an unlucky fate from which they cannot escape.

Keywords: Dostoevsky, Jung's Shadow archetype, Russian writer, characters.

Introduction

According to Jung, the archetypes that can be most easily discerned are the ones that have the most frequent and destructive influence over an individual's ego. These are the 'Shadow', the 'Persona', the 'Anima' and the 'Animus'. The most accessible and easy to experiment is the Shadow, due its nature than can, in most part, be identified form the contents of the personal unconscious.

In AION Researches into the Phenomenology of the Self (Jung, 1969), the Swiss psychoanalyst states that the Shadow is a moral issue, since we cannot become aware of it without a considerable moral effort. According to Charlotte K. Spivack, "...the shadow is the psychological equivalent of original sin, irrevocably lodged in human nature" (Spivack, 1965). This interpretation clearly underlines the moral aspect of the Shadow. To become conscious of the Shadow implies, to recognize the dark aspects of the personality as being real and present. The inferior traits that constitute this archetype have an emotional nature and a special kind of autonomy, this leading to the fact that, at this subterranean level of the personality the individual acts more or less primitive; he is a passive victim of his own emotions and he is incapable to discern.

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Review of the Shadow within the Cultural Domain

In the cultural domain, the main symbolical embodiment of the Shadow is the devil, as God is for the archetype of the Self; we will see the devil as a product of mental illness in 'The Brothers Karamazov', but also in 'The Possessed'.

Another cultural embodiment of the shadow is the character of the 'Schelm' or the 'Fool'. This motif is also portrayed in 'The Brothers Karamazov', by Smerdyakov. This symbol brings together the individual and the collective aspects of the Shadow. In the Jungian psychoanalysis, the confrontation with the shadow represents one of the first and most important stage of removing its coercive force over the ego. Usually, Dostoevsky's characters fail to confront with their Shadows; one exception being 'Raskolnikov'. Also in this context, I need to mention the inseparable connection between the 'Shadow archetype' and the 'motif of the double'. Many cultures regard the Shadow as the second nature of beings, this becoming manifest when the dark side is not accepted. The Shadow is the one that brings with itself the unmasking of all characters (here we have a reference to the Persona archetype). Dostoevsky's 'Double' appears at dusk or during the night, usually when their possessor is alone in his bedroom; they tend to lack color and are painted in shades of gray.

The Concept of the Will and Self

A brief outline of the concept of the will is necessary to continue our discussion. As we already know, the will is that which exerts conscious control over an individual's behavior; it is also the power of choice between alternative actions. In the first volume of Understanding Conflict and War, R. J. Rummel defines the will as *"the power of practical reason, and being thus, the will brings the mind to rational or physical action"* (Rummel, 1975).

Whatever the type of the action, we can see that the will is a force that actualizes various rational potentials that exist within a person. Moving on to the concept of the self, it is worth noting that both the will and the self are powers or forces. The will is a facet of the self, it is the particular ability to exercise conscious choice and to use practical reason. It also is a specific aspect of the self that guides the person through practical reasons toward self-actualization. It is the will as power that enables a person to choose. As we already mentioned, the shadow is instinctive and irrational and so it is prone to psychological projection – an individual will project all his negative traits of personality on the people he comes in contact with and so will perceive them as being enemies. Therefore it's safe to assume that the shadow can function as a veil between the ego and the outside world.

An important part is played here by the merger of the individual with the shadow. This happens in situations of shock or confusion, when the conscious mind becomes paralyzed by indecision. The individuation process raises this very possibility, since it assumes the assimilation of the personal and collective unconscious. The impact of such confrontation with the shadow produces a hampering of moral decisions.

The Appearance of Psychopathology

Returning to Dostoevsky, I should specify another relevant component to his characters' behaviour, namely mental illness. In 'The Double' the use of the motif with the same name gives us an image of the psychopathological. Here, the paranoid illusions and hallucinations of figures that persecute, spawn out of a feeling of shame and of a pathological lack of self-esteem. Golyadkin Senior attributes to everyone around him his own negative traits of personality, thus, everyone becoming an imaginary enemy. This is the same mechanism that make the Shadow archetype function. We see that Golyadkin Junior is the double, but also the Shadow, for it is on him that Golyadkin Senior projects all his imperfections and pent-up impulses. However, here we have a problem if we want to accurately diagnose our character.

While the feeling of persecution and the burdening of everyone around with the patient's defects are characteristic to paranoia, the phenomena of the double is not one of the symptoms of this illness. The patient considers himself without mistake and believes he is continuously tortured

by the others around him who are seen as being evil. Exactly this is the case of Golyadkin Senior who is convinced that everyone is plotting against him[*].

Not even the concept of multiple personality could be used in his case, this illness referring to a hysterical phenomenon in which the personalities are independent one from another. The problem is that all of Dostoevky's characters are conscious of their doubles. We could say that they have classical symptoms of an obsessive compulsive character. We've seen that this not a case of separation of the selves, but instead of an "obsessive balancing" (Kohlberg, 1963), of trying of eliminating an idea or a force with its opposite. This type of obsession is a characteristic of the narrator from 'Notes from Underground', but also to Ivan Karamazov's devil.

Dostoevsky's doubles (physical, as well as mental) persecute their creators by adopting their identities. In the novel, 'The Brothers Karamazov', I have a different point of view. The double and the Shadow take a corporeal form through Smerdyakov, the fourth brother, the bastard, the epileptic, the inhuman and the demonic (according to both his biological and adoptive father); he also represents the figure of the Schelm by his peculiar behaviour – he rarely eats and this only after inspecting his food, he is seen to stop from his activities and to stare blankly and unmoving for minutes and he seems to have no sexual desires of any kind. He is *"…the human embodiment of the townspeople's dark, sordid past…"* (Cohen, 2014).

However, Smerdyakov is not only the devil's son, as his adoptive father called him, he is also an embodiment of the holy fool through his mother Lisaveta, the town's fool, whom everybody tried to protect: we can say that he is a fusion of evil and innocence. It is in him that Ivan projects all his negativity and it is through Smerdyakov that he fulfills his parricidal desire. When mental illness takes over, Ivan's Shadow is projected through a hallucination of the devil. This type of double that acts as a Shadow is also present in 'The Possessed', where the action is centered on the life of Nikolai Stavroghin, an underground man if you will, that waits impassable for a suicide that he caused, to take place.

The initial embodiment of the Shadow is a demonical hallucination, but this changes when Fedka, the Convict comes into the scene and commits the murders that Stavroghin himself desired. The latter fails to confront his shadow and commits suicide. Another interesting case is 'Notes from Underground', a prologue to Dostoevsky's later writings. The man from the underground is the man that emerges from the shadow of its being and speaks from the subterranean on his unconscious. Captive inside his own ego that regards its own self with disdain, the underground man is torn between his multiple antagonised impulses.

In the second part of the novel we have a clear description of the narrator's sick mind, who disregards everybody else, but at the same time is happy to be included in their group. Jung states that, to develop and become aware of a function, it is necessary for its opposite to slide into the unconscious. The same idea works for the subterranean man from 'Notes from the Underground' who admits that he solves his problems alone, with the help of a logical chaos.

Raskolnikov from 'Crime and Punishment' is the only one who accepts his darkness and is redeemed in the end. His Shadow is uncovered in the dream in which he witnesses the beating of a mare. It is obvious from Jung that, dreams are the unconscious channel towards the individual's hidden reality (Jung, 1954).

The Appreciation of Characters and their Shadows

Raskolnikov's aggressivity and all his frustrations are encapsulated in his Shadow that is projected on Mikolka, the one who performs the beating, and all of the spectators that are cheering him represent the demonic voices of the character's soul, but also his alter-egos. The mare is the scapegoat that is being sacrificed, it is Raskolnikov's crucified ego, his lost innocence, the voice of his conscience that has been reduced to silence; by its death, everything is allowed, including murder. The main character's double is Svidrigaillov, a cinical and isolated person. Raskolnikov becomes aware that he is his secret Shadow and when Svidrigaillov commits suicide, the former is freed and can confess his crime (Jung, 1954).

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[*] In Russian, "goly" means naked, and this is a clear pointer to Golyadkin Senior's life and personality: a mediocre functionary who is spiritually void. He even names himself a "goliadka", which means poor, pauper.

It can be seen that both Raskolnikov and Smerdyakov commit murder for reasons that can't even be considered as being pragmatic, the former out of frustration for the conditions of living and for what he himself called a higher purpose, and the latter merely because he thought he should fulfill Ivan's whishes (this case is similar to that of Fedka the Convict who committed the murders that Stavroghin wished for, even though the latter never asked for this particular favor). In defence of the first two characters mentioned in this paragraph we may say that their judgement was distorted by the influence of their own shadows that acted as veils.

Also, one may state that Raskolnikov's fault is lesser than that of Smerdyakov, since in the end he managed to confess his crime, or we can simply say that whatever the influence of the Shadow or of any other thing, they are both guilty. One can already see that, establishing the guilt of the characters and passing a verdict on them is a very difficult task. If we analyze the situation from an objective point of view that would be acceptable today, they are both guilty. However, the situation changes if we take into account the Jungian interpretation of Dostoevsky's works (it is very interesting how the Russian writer created his characters as if they were molded after Jung's theory of archetypes).

Conclusion

We are all burdened with our Shadow and must strive to overcome it, but what happens if we fail or never even try to master it? Raskolnikov's attept to free himself from the chains of his Shadow was too late, he had already committed the murder, but not in vain, he succeeded in redeeming himself, and so his effort must be taken into account. This does not help him to avoid the punishment, but offers him a chance after serving it. On the other hand, Smerdyakov's case is different: he made no attempt to overcome his Shadow, the only argument that he brought in his favor being that he acted fuelled by the desire of fulfilling his brother's wish. It is clear that, he has no chance for a better future and the fault lies with him because he did not create that chance. Dostoevsky's characters always seem to be ruled by a tragic destiny, an unlucky fate from which they cannot escape.

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RESEARCH ARTICLE

Some Demographic Changes in the Population of Montenegro with the Projection of Future Demographic Development

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Abstract

Dramatic demographic changes through which in recent decade's passes Montenegrin society, the consequences arising from the new realities require a serious socio-political engagement. Process of population aging, that began the seventies of the 20th century, represents a significant problem. The process of demographic change was accompanied by an internal migration to major urban centers, primarily Podgorica and Montenegrin coast, leading to emptying the interior of Montenegro. Unfortunately, this development of the population structure of Montenegro opens a series of questions and challenges that would the creators of the future you should put high on the scale of its priorities. In this text we will point out on change of total number of citizens of Montenegro according to the base and chain indexes of 1921-2011 and population in Montenegro 2016−2091 (cohort model projections).

Keywords: Montenegro, demographic changes, demographic development.

Introduction

For almost twenty years now, Central and Eastern Europe have been undergoing the transition from "state-socialist" societies with planned economies to "free" societies with market-oriented economies. The re-organization of social institutions during this transition period, although has not come to an end yet, it had been accompanied with dramatic changes of people's lives. Following the collapse of "communism", they found themselves unprepared for the changes about to happen. Not only did they have to adjust their beliefs and their expectations about almost every single aspect of life; they also found themselves ill prepared for succeeding in a new, unfamiliar society, with qualifications suddenly worth little. Many were exposed to hardship previously unknown to most of them [e.g. unemployment, poverty, social exclusion, limited access to health care depending on financial circumstances] (Hoff, 2014).

The population trends in the Montenegro reflect the country's trends in fertility and mortality and in internal and international migration. These components underlie the changes in the size of our population, its geographic distribution, its age and sex composition, and its racial and ethnic composition. They also influence changes in the country's housing and household composition. The trends examined in this text represent some demographic changes in the population of Montenegro with the projection of future demographic development. We believe that a continued

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discussion about these issues between social scientists and policy makers will be crucial to leverage the benefits of changing population compositions. Design of the structure of the population is beyond the scope of this article, but this is an obvious topic for future research. Namely, life expectancy is increasing almost universally, and the health status of the older population is improving. The importance of investments in education is well known, and education levels are increasing in the great majority of countries. Although the results presented refer to Montenegro, they could be of interest for other regions around the world, including both developed and developing countries.

Analysis of the Montenegro's Demographic Changes

Throughout the twentieth century Montenegro was typical immigration area. Low economic development and vast destruction during the wars in this century are the main cause of the mass emigration. The most common destination for migrants from Montenegro was mainly Serbia, but also other areas of the former Yugoslavia. However, since the mid-sixties, and especially after 1990, Western Europe and some overseas countries are becoming increasingly a destination of Montenegrin emigrants. Montenegro was also the immigration area. In fact, it was more than one type of immigration: colonists, marital, economic. Unfortunately, in the last decade of the twentieth century, the most important are forced migration caused by wars in the former Yugoslavia. With respect to immigration, there were varying intensity; but as a rule, the smaller scale than emigration from Montenegro (Milanović, Radojević, & Škatarić, 2010).

Table 1. Change of total number of citizens of Montenegro according to the base and chain indexes, 1921-2011.

Year	Base index 1921=100	Chain index
1921	100	-
1931	115.64	115.64
1941	135.54	117.21
1948	121.19	89.41
1953	134.87	111.29
1961	151.60	112.40
1971	170.10	112.21
1981	187.68	110.33
1991	197.54	105.26
2003	199.19	100.83
2011	199.15	99.98

Sources: Despotović, Joksimović, and Jovanović. (2015) and Statistical Office of Montenegro (2015).

According to Despotović et al. (2015) indicating that the conducted census is total population of Montenegro recorded a change in growth. On the basis of the calculated base index which took the year 1921 as the base year, the highest growth was in 2003 (99.19 %) in comparison to 1921. Chain indexes show that in the post-war period, the highest growth was in 1953 compared to the previous census from 1948, as well as in 1961 in the comparison to the census from 1953. In the subsequent period, it began to stagnate, i.e. it began to decline. These changes are immanent in societies that are rapidly industrialized and urbanized.

Internal migration of population in Montenegro was very intense in the last two decades too, mainly dominated by population movements from the North to the Central and Southern parts of the country and from rural to urban areas. Reasons for internal migration are the search for better business and life conditions and for employment, esp. in tourism and constructing. As a combined effect of internal and international migration, the population in some municipalities of the Northern region has been continuously declining since 1991, while the capital city Podgorica and municipalities of the South had a constant influx of inhabitants. As a result, the net migration rate for the whole Northern region constantly remained largely negative (-15.5 % as compared to -1.6 % at national level for 1991-2003). From the municipalities which feature an above average (over 10 %) or a very high proportion of the population abroad (over 20 %), most are located in the

Northern region. This mostly rural, ex-industrial region lags clearly behind the two other ones as shown by all socio-economic indicators. As high unemployment is a major driving force of poverty and social exclusion, the region also faces biggest problems with poverty (highest share of population living below the poverty line – EUR 162/month – of 19.2 % and high proportion of cases of multi-deprivation) (Yoon, Kim, & Lee, 2014).

Montenegro's Demographic Changes as a Socioeconomic Predictor

Demographic change is one of the most important determinants of the future economic and social landscape. Many researchers have looked into how changes in the size and the composition of an economy's population influence macroeconomic outcomes. The channels through which demographic changes affect an economy typically include savings and investment behaviors, labor market decisions, and aggregate demand and supply responses. In the medium to long run, both changes in the labor supply and changes in productivity-either viewed as exogenous or caused by demographic changes-could significantly alter an economy's aggregate supply and thereby economic growth, since demographic changes affect the amount and combination by which its factor inputs are utilized. In the short run, demographic transitions are likely to affect aggregate demand, since the amount of consumption and investment would depend critically on structural changes in the population's age-earnings profiles (Grečić, & Kaluđerović, 2012).

Basic assumptions for projections: specific age fertility rate and specific age death rate were assumed to be constant during next century. Absolute specific age net migrations were assumed to be negative and fixed until 2026 (while relative specific age net migration (net migration rate) decreased constantly due to increasing specific age population), and then are equal to zero. Negative net migration rates were evidenced in Montenegro in periods of economic and political instability, particularly at the end on XX century. It is natural to assume that such migration trends will continue as long as instability exists, with declining trends strongly correlated with increasing stability (Baćović, 2007).

Table 2. Population in Montenegro 2016 - 2091 (Cohort Model Projections).

Year	Montenegro's Population	Annual Growth Rate %	Average Annual Increase	Annual Births Increase	Annual Deaths	Annual Natural	CBR	CDR
2016	708.612	0.37	2.566	9.859	7.053	2.806	13.9	10.0
2021	718.257	0.27	1.929	9.596	7.427	2.169	13.4	10.3
2026	725.267	0.19	1.402	9.503	7.861	1.642	13.1	10.8
2031	730.965	0.16	1.140	9.528	8.388	1.140	13.0	11.5
2036	733.803	0.08	568	9.535	8.967	568	13.0	12.2
2041	733.901	0.00	20	9.446	9.427	20	12.9	12.8
2046	731.688	-0.06	-443	9.302	9.745	-443	12.7	13.3
2051	727.901	-0.10	-757	9.183	9.940	-757	12.6	13.7
2056	723.092	-0.13	-962	9.121	10.082	-962	12.6	13.9
2061	717.507	-0.15	-1.117	9.082	10.199	-1.117	12.7	14.2
2066	711.542	-0.17	-1.193	9.023	10.216	-1.193	12.7	14.4
2071	705.556	-0.17	-1.197	8.934	10.132	-1.197	12.7	14.4
2076	699,822	-0.16	-1.147	8.838	9.985	-1.147	12.6	14.3
2081	694.194	-0.16	-1.126	8.758	9.883	-1.126	12.6	14.2
2086	688.438	-0.17	-1.151	8.694	9.845	-1.151	12.6	14.3
2091	682.590	-0.17	-1.170	8.632	9.802	-1.170	12.6	14.4

Source: Baćović (2007).

Zero rates of net migration rely on the optimistic scenario of economic and institutional development in Montenegro in next two decades, despite the fact that demographic components will be more of an obstacle than the source of such trends. If, instead of assuming zero a specific net

migration rate starting in 2026, we assume negative rates to continue, the demographic structure of a population will shift so that unproductive groups dominate even more. At the beginning of 21st century, Montenegro is approaching a post-transition demographic era, characterized by almost an equal crude birth rate and crude death rate, and both slightly higher than 10 per thousand people. The post-transition period should end in the fifth decade, when the "future declining" period starts with a constant decline in population, low fertility rates and aging (Baćović, 2007).

Montenegro's Demographic Changes as a Socioeconomic Predictor

In Montenegro experienced huge declines of the age dependency indices of young people. Growth of the age dependency index of old people was uneven in Montenegro. Large shares of the elderly in the working age category, and their outflow, especially the baby boomers (Stojilković, 2010), will be the most prominent upcoming economic trend in the Montenegro and will affect further growth of the age dependency index of old people. Vojković, Magdalenić, and Živanović, (2014) citing the research of Chawla, Betcherman, and Banerji (2007) suggest that, the Balkans, along with the rest of Eastern Europe, have suffered the effects of a "third demographic transition", which would be the trend of rapid population ageing occurring under the conditions of unprecedentedly slow and weak institutional development and that these would countries could avoid the severe economic consequences if they accelerate their economic transition and undertake long-term policies to combat the ageing of the population.
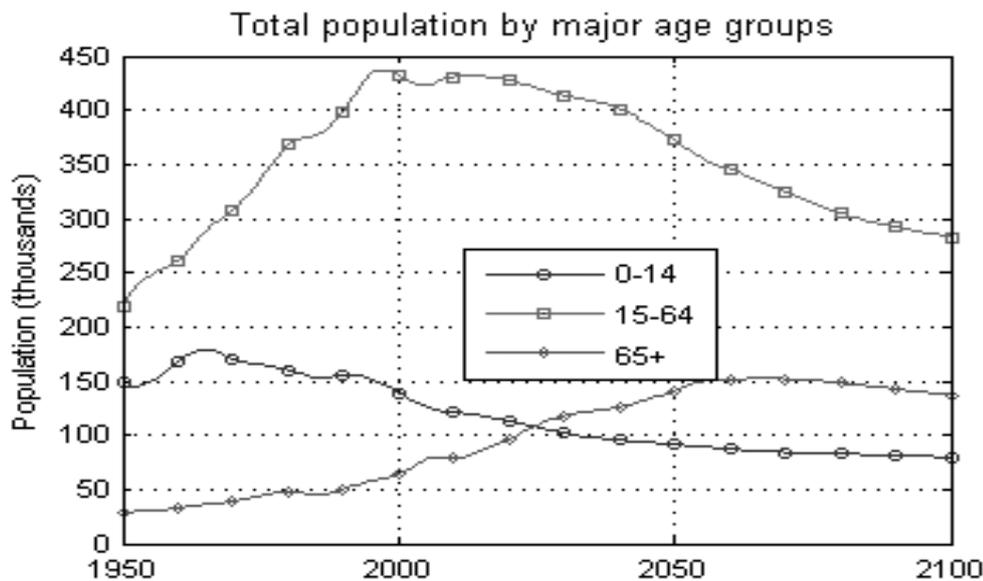

Figure 1. Total Population by Major Age Groups 1950 - 2100 in Montenegro.

Source: Vojković et al. (2014).

In order to avoid irreversible consequences of aging, it is essential to maintain the necessary access to information and awareness of the relationships between population aging and social, economic and natural development. In order to move from knowledge to concrete actions, providing objective scientific information about the specifics of the aging process specifics to decision-makers is of exquisite relevance (Stloukal, 2001).

Our research records based on similar studies Wertheimer - Baletić (2005) indicates that in its overall development policy of Montenegro is already faced with economic, social, health and other consequences of long – term unfavorable demographic processes that are underway and which worsen with time, so that Montenegro must continually adapt their economic, health and social policy of ongoing demographic changes and their implications for the lives of families, individuals and the whole community. Currents and current demographic phenomena and processes intensify not only economic but also a social crisis, a crisis of the family and the general crisis of life in Montenegro (Rajović, & Bulatović, 2015; Rajović, & Bulatović, 2016).

The adjustment of the age structure at the end of the transition takes many decades to complete. A key implication of this slow adjustment process is that population growth continues for many years after replacement fertility is reached if, as is often the case, the population is still relatively young when fertility reaches the replacement level. The tendency of population size to increase after a two-child family size has been reached is referred to as population momentum; it is the consequence of a young population age structure ["young" is defined relative to the age structure in the current life table] (Bongaarts, Buettner, Heilig, & Pelletier, 2008).

Urgent reversal, primarily to the knowledge of the real demographic situation and its economic, social, health and other consequences for the life of the people, the inevitable assumption of our overall development. Because the population is an important factor in the development are component the development of the production potential of the country, not just a consumer. The current demographic situation and future demographic processes that have determined the legality of long-term demographic inertia are becoming the limiting factor in the overall economic and social development.

Conclusion

The 2014 estimate of number of population and demographic indicators of Montenegro: number of inhabitants in Montenegro in mid - 2014 was 621.810; working age population or the population aged 15-64 years is 68 % of the total population; in Montenegro, on the basis of natural increase per 1000 inhabitants, the population increases annually by 2.4; the 1000 population per year made 5.7 marriages, which is the rate of marriages, and the divorce rate is 0.9; the rate of migration in Montenegro is 6.8 , which means that for each of 1.000 inhabitants 6.8 persons changes their place of residence within the borders of Montenegro and life expectancy at birth in 2014 was 76.4 years (Statistics, 2014).

According to Lukić et al. (2012), the current global responses to adverse demographic trends in the modern world can be applied to the Western Balkans in the forms of different measures. For example, states can apply measures to extend life expectancy, or measures that restrict access to birth control, or measures to increase immigration, or measures that seek to increase the fertility of positive incentives. European policy wants to support local authorities in areas affected by depopulation by helping the Structural Funds. Specifically, funds are helping small and medium enterprises, rural cooperatives, protect regional nature and culture, develop skills and support equal opportunities. Western Balkan countries want to integrate into the European Union. For them, union experiences initiate inventions of political and financial solutions to fight against depopulation.

Vojković et al. (2014) conclude by referring to studies by Chawla at al. (2007), Bloom, Canning, and Fink (2011), Mendryk and Dylon (2013) that, *"yes in the long run, the population ageing will undoubtedly present a threat to economic growth, because it leads to a decline of working-age population and ageing of the labour force. Ageing of the workforce can affect its productivity because older workforce cannot produce at the same level of output a younger one could, though the more recent findings on the issue are assorted. It is necessary to constantly supervise the situation and introduce relevant policies to combat the effects of population ageing. Handling the situation on the labour market requires reforms of the pension system, educational reforms, policies referring to employment of old workers, appropriate migrations management and structural adjustments of the global economic system"*.

Conflict of Interest Statement
The authors declare that they do not have any conflict of interest.

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RESEARCH ARTICLE

Dynamic Mathematics Software as a Necessary Component of Modern-Math-Teacher Preparation in Ukraine

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Abstract

The article discusses the relevance of the study of dynamic Mathematics software by future math teachers in Ukraine. The focus is on the requirement, not only to know about specialized dynamic software, but also to be able to organize an effective learning process with its usage. The arguments for the organization of special courses in the study of dynamic Mathematics software are based on the need to demonstrate the skills of usage of modern Mathematics software. The authors describe their own experience of teaching the course at A. S. Makarenko Sumy State Pedagogical University (Ukraine), which is included in the curricula as variable course of math-teacher preparation, in particular, the successive changes of the content of the course, due to constant and rapid development of Information Technology, during all periods of learning.

Keywords: dynamic mathematics software, math-teacher preparation, special course, pedagogy.

Introduction

Higher education, in the system of general education aims to solve the problems related to individuals' future working career. Such preparation is determined by many factors, among which there is the set of future competences of the graduate, which is consistent with the requirements of both the employer and the profession itself.

In the framework of higher education, the determining factor is not so much knowledge of the subject being taught, as the possession of a set of pedagogical approaches and techniques that allow to develop knowledge and skills in the entities of study. The ability to use information technologies (software components), that support the study of school subject, is allocated among such methods. Numerous results of pedagogical studies prove the influence of the level of information technological development, not only on the level of the development of science, but also on the technology of teaching of courses (Bykov, 2012; Spivakovskyi, 2003; Spirin, 2013; Tryus, 2012; L'vov, 2008).

This influence occurs in a variety of methods. Among the methods is the creation and continuous improvement of specialized software, which can demonstrate the basic ideas of the course, investigate the properties of typical objects, and hypothesized techniques of solving of problems. Such software include Dynamic Mathematics Software (DMS) as the base of "learning" and "teaching", which is invented to support school Mathematics.

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Monitoring the usage of DMS shows that various popular types of software and their country of use include; MathKit (1C Company, n.d.), *Live Mathematics, and Live Geometry* (Institute of New Technologies, n.d.) (Russia), *GRAN, DG* (Dynamic Geometry Software *DG, n.d.*) in Ukraine; *GeoGebra* (GeoGebra Wiki, n.d.) in Austria, and *Cabri* (CABRILOG, n.d.) in France, *The Geometer's Sketchpad* (The Geometer's Sketchpad, n.d.) in USA, and *GeoNext* (GeoNext, n.d.) in Germany.

In effect, it is not enough for the math teachers to be aware of the existence of such dynamic software. Rather, they need to be able to establish its usage in an effective learning process. This ability can be obtained with the practical experience in solving problems, as well as in the process of organizing special training for that purpose. This is possible with the introduction of special courses for the study of specialized software in the curricula (the variable part) in the framework of the math-teacher preparation.

The authors have already mentioned the need and the arguments in favor of the actuality and the relevance of special courses of Computer Mathematics for specialists-mathematicians (Semenihina, 2013). To be precise, special courses should be provided for the study of software as a modern support of scientific research. In addition, there should be the demonstration of aptitudes for Mathematics software usage, the acquaintance with the specificities of the work of the various Mathematics software, and the simplification of modeling for mathematical objects.

Although these arguments specify the certainty of the study of Mathematics software for mathematicians, that is not enough for the future math teachers. The modern-math-teachers' preparation must include both the study of the methods of teaching Mathematics and the study of technologies for the usage of specialized software, among which the DMS is significant. This implies an emphasis on two points – the ability to apply DMS to solve the problem, and the ability to use DMS for the organization of the educational situation. Such vision is agreed with modern competence approach and it is a natural consequence of the development and the impact of modern information technologies, as well as the trends of the improvement of traditional methods of teaching Mathematics. Consequently, it is relevant in the math-teacher preparation (Semenihina, & Chashechnikova, 2013).

Method

During 2010-2014, the authors investigated the impact of the special course on the psychological readiness of future math teachers as to use DMS at the lessons of Algebra, Geometry, Solid Geometry or Mathematical Analysis (Semenikhina, & Drushlyak, 2015). The base of the research was A. S. Makarenko Sumy State Pedagogical University in Ukraine.

Because this personal objectives can be formed within the teaching of the special courses, it was natural to involve statistical methods to give the opportunity to talk about the dynamics of change based empirical on data (about the initial and the final state of the object).

As a result, the authors fixed the internal state of the psychological readiness of the student to use DMS with the help of research questions at the beginning and end of the study of the special course. The research questions were: "Are you mentally ready to use the DMS in the study of: (a) Algebra; (b) Planimetry; (c) Solid Geometry; and /or (g) Mathematical Analysis? What DMS are you ready to use during these lessons? Why did you choose that type(s)?"

Results
Readiness to Use DMS in Teaching

We applied the McNemar's test (Grabar, & Krasnyanskaya, 1977), because the scale of results in the questions has two items ("Yes" or "No"). Thus, this nonparametric was used to compare the distributions of objects in two sets according to the two categories; "ready – not ready". For the McNemar's test the following conditions are required: (1) random sample; (2) dependent sample; (3) pairs (x_i, y_i) which are mutually independent (the members of the sample have no effect on each other); and (4) the scale has only two categories.

The research was conducted from 2010 to 2014. Each year the authors have accumulated the results of the sample with volumes – 37, 35, 38, 37, and 31 respectively. The total number of respondents amounted to 178 people. The authors selected results from them at random.

The hypothesis H_o: the special course does not impact on the psychological readiness of students to use DMS in professional activities. Then the hypothesis H_a: the special course impacts

on the psychological readiness of the future math teachers to use DMS. The test of the assumption was carried out according the McNemar's test on taken results in 40 pieces from 178 questionnaires at random (see Table 1).

Table 1. The survey of the psychological readiness to use DMS.

The Second Surve			
The First Surve	$y_i=0$	$y_i=1$	
$x_i=0$	a=7	b=16	a+b=23
$x_i=1$	c=6	d=11	c+d=17
	a+c=13	b+d=27	N=40

Since $n=b+c=22>20$, the statistics of the test was calculated according the formula $T_{exper}=(b-c)^2/(b+c)=4,54$. The assumption of the fairness of the null hypothesis was approximated like the χ^2 distribution with one degree of freedom ($v=1$). For significance level $\alpha=0.05$, the critical value of the test was $T_{critic}=3.84$. The obtained value $T_{exper}=4.54 > T_{critic}=3.84$, therefore, the hypothesis H_o was rejected and alternative hypothesis, indicating that the impact of the special course on the readiness to use DMS in future professional activity is significant and cannot be explained by random variation, was accepted.

Because the problem was to study the psychological readiness to use DMS at the lessons of Algebra, Planimetry, Solid Geometry and Analysis, as well as the readiness to use different DMS {*Gran (Gran1, Gran2d, Gran3d), GeoGebra, Cabri, MathKit, DG, GS*}, the authors were able to fix the results of the readiness to use DMS in teaching of different subjects (Algebra, Planimetry, Solid Geometry, Analysis) (see Table 2).

Table 2. The Survey of the Readiness to Use DMS in Teaching of Different Subjects.

Do You feel readiness to use DMS at the lessons of:	Quantitative indices					Indices of the McNemar's test ($\alpha=0.05$)			
	a	*b*	*c*	*d*	*N*	$n=b+c$	T_2	H_o	H_a
Algebra	6	17	7	10	40	24	4.17	0	1
Planimetry	2	21	9	8	40	30	4.80	0	1
Analysis	5	18	7	10	40	25	4.84	0	1
Solid Geometry	4	17	15	4	40	32	0.13	1	0

For all items, except the last, the authors had the rejection of the null hypothesis, H_o and the acceptance of the alternative hypothesis. At the significance level $\alpha=0.05$, the studying of the special course had a positive impact on the psychological readiness of future math teachers to use DMS at the lessons of Algebra, Planimetry, and Analysis.

However, experimental results did not support the positive impact on the readiness to use DMS at the lessons of Solid Geometry. The increase in the number of students who feel the readiness to use DMS at the Mathematics lessons is presented in Figure 1.
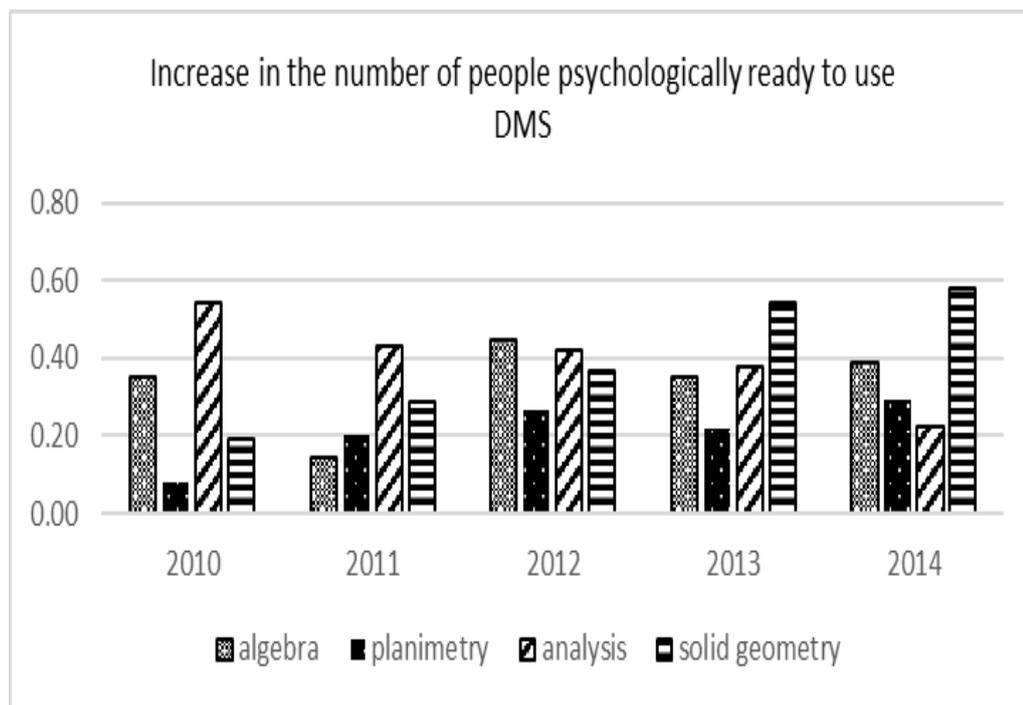
Figure 1. Increase in the Number of People Psychologically Ready to Use DMS.

Impact of the Special Course on the Formation of Skills

This research also sought to answer the question: "Does the special course contribute the formation of skills to choose DMS rationally to solve a mathematical problem?" (Semenikhina, & Drushlyak, 2015). These skills were formed during study of the special course, so statistical assessment of the learning results could be based on non-parametric sign test for dependent samples (Semenikhina, & Drushlyak, 2015).

During the special course, there were two examinations in the middle and at the end of the semester. Five tasks were offered at these exams. Each well-reasoned choice of DMS was estimated at one point. At the end of the semester, comparative tables were composed; where the dynamics of results were fixed during 2010 to 2014. The number of sample of 178 people were selected. Thirty (30) results were taken at random (Table 3).

Table 3. The results of two exams in the middle and at the end of the semester.

Number of Student	The first mark	The second mark	Number of Student	The first mark	The second mark	Number of Student	The first mark	The second mark
1	2	3	11	2	4	21	3	4
2	1	4	12	4	4	22	2	3
3	4	5	13	3	3	23	2	2
4	1	3	14	3	3	24	3	2
5	1	2	15	3	3	25	3	3
6	4	5	16	1	2	26	3	3
7	3	4	17	2	3	27	3	3
8	3	2	18	2	2	28	4	5
9	3	4	19	4	3	29	2	3
10	3	2	20	3	3	30	3	4

These points determined the number of respondents whose total score decreased ("−"), didn't change ("0") and increased ("+") (Table 4).

Table 4. The dynamics of the results of two exams

The dynamics of the results	«−»	«0»	«+»	n=«−»+«+»
The number of respondents	4	10	16	20

In accordance with the purposes of the experiment the hypothesis, H_o: the study of the special course does not contribute the formation of skills to choose DMS rationally in solving a mathematical problem. Then alternative hypothesis, H_a: the study of the special course contributes the formation of such skills.

These hypotheses determine one-sided sign test for testing dependent samples. According to the decision rule (Grabar, & Krasnyanskaya, 1977) the value of $T_{exp}=16$ (the number of characters "+" in the sample), $n=20$ (the number of respondents who had changes in the results), the interval of the hypothesis H_o is (1C Company, n.d.; Semenihina, & Chashechnikova, 2013) at the significance level of 0.05.

T_{exp} was not included in the acceptance interval of the hypothesis H_o, so the hypothesis H_o was rejected and the hypothesis H_a was accepted. Thus, the study of the special course contributes the formation of skills to choose DMS rationally. The value of T_{exp} went beyond the segment to the right, so a conclusion about positive dynamics in the number of students who have formed a critical view on the use of some DMS was made.

Discussion

The development of the information society influences education in several dimensions. This impact is observed not only in active equipment settings of educational institutions with computers, but also in the understanding of the need to rethink conventional approaches to teaching. This particularly applies to Mathematics, the classical course of which, not only is systematically and fundamentally built but is quite flexible in terms of introduction of modern information support. Such support is in simplification and acceleration calculations, visualization of mathematical objects, and their dynamic change. This cannot be said, for example, about Philosophy, which is an established discipline, whose study has not significantly changed with the involvement of information technologies.

Now the authors can say that there are countless varieties of Mathematics software {computer algebra systems (CAS) like *Maple, Mathematica, Maxima, Sage*, etc.; dynamic Mathematics software like *GeoGebra, The Geometer's Sketchpad, Cabri*, etc.}. These software allow rapid solving of problems in various fields of Mathematics, from simple constructions to complex analytical calculations and modeling of processes. A variety of such software is an additional tool for specialists in various fields of Mathematics, in particular, for those who teach Mathematics. In other words, such software is necessary object of study for mathematicians.

Ukrainian math teachers at secondary schools and universities feel the impact of information technologies and understand the potential that Mathematics software carries. Therefore, they use such software to support the educational process, as evidenced by publications in relevant Ukrainian periodicals – "Information Technologies in Education", "Information Technologies and Learning Tools", "Computer in School and Family".

Currently, the widespread use of Mathematics software in the educational process at secondary schools and universities is well acknowledged in Ukraine. At the beginning of the 21st century, courses for the study of Mathematics software were introduced in the curricula of math-teacher preparation, and dissertation research for the last 10-15 years and had often focused on the integration of such software in the learning process.

However, the analysis of the Ukrainian practice of usage of Mathematics software in math-teacher preparation, conducted on the basis of existing curricula, materials of scientific-methodical conferences of various levels, and interviews with graduates of different universities, assures that either Mathematics software is never used, or some components of different Mathematics software were used, or only one Mathematics software is used in studying Mathematics. This impoverishes

substantive specialist preparation and does not contribute to the formation of a culture of the use of such software in the teacher's professional activities. Few, if any, research works could be identified regarding to the use of different Mathematics software in the teaching of some fields of Mathematics. In the authors' opinion, there are also few research works that present approaches to the systematic use of Mathematics software in teaching school Mathematics within one year (5th class, 6th class, etc.).

A detailed study of the research works of the authors, which were focused on the involvement of such software in the teaching of Mathematics, showed that there are no research devoted to learning the usage of Mathematics software (CAS, DMS) in teaching. There are research works which rather focused on solving problems in some Mathematics software (*Maple, MathCad, Maxima, Sage, GRAN*, etc). Also the authors identified too few research works that demonstrate the systematic implementation of software in the math-teacher preparation.

On the other hand, the study of research focused on the attraction of Mathematics software in the process of teaching Mathematics, confirms the relevance of the problem of the usage of such software. Example of such studies and countries include the following: Vinnychenko, Goroshko, and Zhaldak (2008); Rakov (2005); and Tryus (2012) in Ukraine; Dubrovsky and Poznjakov (2008); Zhuravlev (Zhuravlev, 2005); and Martirosyan (2010) in Russia; Hrapovickij (n.d.) in Belarus; Hohenwarter, Hohenwarter, and Lavicza (2008) in Austria; Scher (2000), Althoen, and Brandell (2009) in USA; Dimakos, and Zaranis (2010) in Greece. They comment how to use various Mathematics software, and they point to the need to introduce the respective author's methods of teaching Mathematics, which are based on Mathematics software and computer-oriented systems of teaching Mathematics, computer-oriented methods of teaching of some topics and sections of secondary school and university Mathematics courses, technologies of electronic, mobile and blended Mathematics teaching, etc.

Thus, the authors can note that there is a contradiction between the need to use Mathematics software and the absence of sufficient methodological support, or even developed courses devoted to the attraction of such software in the mathematical training of the young people. This suggests that the need for the formation of skills of future math teachers to use such software in their professional activities is urgent.

On the other hand, there is currently a unique situation in which the computer revolution has brought intellectual work in the priorities of human activity. People with mental actions – to understand the task clearly; to be able to solve it without additional guidance; to be ready for active but responsible involvement of innovations; and to find the time to study constantly and to teach others – have become more valued (Druker, 2012). These factors cannot be implemented without the mastering of specialized software. According to the forecasts of the world's leading experts, new jobs will require intelligent actions that rely on information technologies. The requirements for qualification and versatility of employees will increase constantly and steadily. It requires focusing on professionally oriented software and the ability to use them in solving professional and life goals.

The generalization of the results of Ukrainian research works recommend that teachers formerly focused on the process of getting an answer during teaching Mathematics (it was important to develop skills to transform and simplify expressions, calculate its value, etc.). However, too little time was devoted to study of the answer. After the advent of computer technologies and Mathematics software, the process of finding the answer becomes less important, because the computer finds it. The empirical search of laws, the interpretation of results, and a critical look at its application have become more important. The authors believe that this should be the basis for the reformation of the math preparation in Ukraine. Despite the fact that high-quality Mathematics education is formed under influence of good teachers, teacher preparation should be focused on the need to teach the use of Mathematics software consciously and rationally in daily life and future career.

Economists talk about the reduction of the role of industrial and agricultural workers in the countries of Western Europe, the USA and Japan, and the rapid rise of a new class of intelligent employees, who already comprise more than half of the employed population in developed countries (Wolfram, 2016). As the Minister of Education and Science of Ukraine S. Kvit noted: *"Today more than 95% of Ukraine's economy is 'in the past'. This is the third and the fourth technological structures – ferrous metallurgy, petrochemistry, etc. The modern, the fifth and the*

sixth levels of technological structure, which, in particular, include information, bio- and nanotechnologies, accounts for less than 5% of the economy. In the world there is a struggle for intelligence" (Kvit, 2016).

Therefore, the authors can say that the transition of society to a new stage of its development gives education a task to reform the Mathematics teaching, which is in line with the goals of the computer revolution. In other words, a new system should organize math preparation of students for life in the modern world in a novel way; not so much to accumulate Mathematics knowledge. But then again, students should be able to operate this knowledge with the production of new knowledge, using mathematical methods based on the potential of information technologies. By coincidence, the rare application of Mathematics software, which we can see in Ukraine, is not enough. The urgent need is a harmonious combination of Mathematics knowledge and Mathematics software even at school. The leading role of this combination is imposed on teachers and the quality of math preparation of young people and the development of society as a whole, depends on the teacher preparation for professional work (Semenikhina, & Drushlyak, 2015).

The authors believe that, the level of the development of Mathematics software should be taken into account together with a focus on the fundamentalism of math preparation. This is because of the need to involve specialized software by teachers. We believe that specialized Mathematics software will be perceived as the object of study and learning tools.

This is confirmed by the experience of the introduction of the course "Computer Applications in the Study of Mathematics" at A. S. Makarenko Sumy State Pedagogical University (Ukraine) (Semenihina, & Drushlyak, 2011). The course involves 50 hours of class work. The main purpose of the course is the study of Mathematics software to support the learning of school Mathematics, clarifying the usage of software in teaching school Mathematics, and the study of modern methods of usage of software in the study of school Mathematics.

Concerning the formed knowledge and skills of students, future math teachers should present knowledge and skills in the following content areas:

1. the awareness of Mathematics software and the ability to classify them;
2. the proficiency of the typical problems of the school Mathematics and ability to solve them with the tools of dynamic Mathematics software which include:
   a. the construction of graphical models of plane and solid figures;
   b. the determination of quantitative characteristics of mathematical objects (length, angle, area, volume);
   c. the solving and the studying of construction problems;
   d. the calculation of triangles;
   e. plotting graphs and functions research;
   f. graphical solution of equations, inequalities and their systems;
   g. the study of the properties of derivatives of functions;
   h. the calculation of definite integrals; and
   i. basic statistical data processing, the determination of numerical characteristics of the statistical probability distributions.

Conclusion

This course has already been studied for 7 years. It has been revised several times, in terms of content and learning structure. Initially, it focused only on the study of computer elaboration of Ukrainian researchers but later, the issues of computer testing and project technologies were included in the course. This included recent enhancement related tools of dynamic Mathematics software, deeper investigation of the possibilities of software *MathKit* and *GeoGebra* for automatic answer checking and the creating of interactive applets.

Statistical analysis of the effectiveness of such special course suggests the feasibility of its study and usage. Experimental data (178 respondents) confirmed the positive dynamics on the readiness to use DMS (the McNemar's test at the significance level of 0.05), and on the formation of a critical choice of the usage of some tools of different DMS (the sign test at the significance level of 0.05).

The authors suggest that, such a course cannot become classical because of a constant and sufficiently rapid development of Information Technology. Nevertheless, they consider it as unavoidable in the curriculum of the specialization of Mathematics as a pedagogical direction.

To study such a course, future math teachers need the skills to: (i) use Mathematics software in order to support the professional pedagogical activity; (ii) demonstrate the abilities of DMS; and (iii) also provide the need to develop a culture of software usage in their professional activity as math teachers.

Conflict of Interest Statement
The authors declare that they do not have any conflict of interest.

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RESEARCH ARTICLE

The Development of 'Project Competence' of Future Teachers

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Abstract

The essential characteristics and a structure of project competence of future teachers are revealed in the article. The authors notice that, to put into practice projection, that is, to have a project competence, certain skills such as analytical, gnostic, research, diagnostic, creative and reflective skills should be developed in a future teacher. Since project skills require a combination with other specific narrow methodological skills, the authors have carried to them also reflective, research, the ability to find multiple problem solutions, group, management, presentation and communication skills.

Keywords: future teacher, educational projection, project competence, skills.

Introduction

An analysis of scientific literature shows that the successful achievement of goals and further professional activity of future teacher is impossible without a high level of development of project competence, which is the basis of methodical competence, so as to perform professional activity, a teacher has to project his actions constantly, possess techniques of professional project thinking such as planning, analysis, prognostics, modelling etc.

We believe that the nature of competence is that it is a product of education; a consequence of human self-development, his personal growth, a consequence of self-organization and generalization of a personal and working experience.

To identify the main characteristics of a future teacher's project competence, it is necessary to examine a number of scientific concepts that will help to reveal the essence and specificity of this phenomenon.

Definition of the Essence of the Concept – "Projection"

In modern conditions, future teacher's professionalism is determined by his ability to diagnose, model the educational process, i.e. to possess of a project competence in modelling lessons, extracurricular activities, academic programs, independent extracurricular activities etc.

Let us analyze the categories that are the key in preparing future teachers to realization of the project competence. The central concepts of the scrutinizing problem is a "project", "projection", "project skills ", the correlation of the concepts "projection", "prognostics", "modelling" and "skill".

In the V. Dal's defining dictionary to project is to plan, to think, ..., to predict to perform, to compose a note for this" (Dal, 1980: 148). L. Stoliarenko defines pedagogical projection as one of any teacher's functions that is no less significant than the organizing, gnostic or communicative

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functions (Stoljarenko, 2000: 61). I. Pìdlasyi considers projection (planning) as "the last stage of preparation to the lesson that ends with the creation of a programme of the management of the students' cognitive activity" (Podlasyj, 1999: 534).

Other scientists say that the projection is a very important stage in the preparations to the use of specific pedagogical ideas in the real pedagogical process. Therefore it is important to create a specific technology that will help a future teacher to project the students' educational process (Zhernovnykova, 2015).

In modern pedagogy the concept "projection" is regarded as orientation to the future (without taking into account the past), ideal rethinking and the practical implementation of that what is possible, and what should be; one of the ways of innovative activity that use a socio-cultural mechanisms of construction and reconstruction of social objects. A lot of interesting ideas are devoted to the projection in the scientific literature. J. K. Johnson states that, the projection process in its development goes through three stages: the divergence (the expansion of limits of the project situation with the aim of providing rather extensive space for the solution search), transformation (the creation of principles and concepts); convergence (the choice of optimal solution from a lot of alternatives) is considered to be classical. The projection is also examined through the prism of activity on basis of which it is fulfilled. N. Dakhin considers projection as an activity for creating, developing, planning, constructing of a certain system, object, model (Dahin, 2009).

The projection as a kind of activity always oriented to provide the effectiveness of professional training and to develop professional competence strictly in area. Any projection that is due to the need of the permission of the relevant professional problem, is creative and based on the motivation, the value orientation, knowledge, skills, professional experience and personal and professional reflection. The result of the projection is a model of a specific, professional object. A new way of solving professional problems is based on this model and it provides various variants of the usage of this model.

The most important for this research is the concept of the project, professional activity which is introduced in the researches of M. Vilonsky, P. Obraztsov, and A. Uman. Based on this strategy, it appears that professional projection should include the following stages: (i) definition of the projection aims, the description of the expected results in specific details and measured parameters; (ii) a mastery of the substantive aspect of projection in the context of a future professional activity (knowledge, abilities, skills, techniques, information capacity of the material, the understanding of the system of semantic relations with its elements of professional activity); (iii) identification of phasing of professional activity patterns directed on the optimum achievement of the objectives of the project; (iv) a presentation of the professional experience have to be assimilated in the form of a system of cognitive tasks; (v) the selection of appropriate methods, forms and means of implementation of project activities; (vi) the elaboration of logic of the project activities with the aim of gaining experience on the basis of the project; (v) monitoring and measuring the quality of a project through the professional reflection; and (vi) the individual adjustment of the project activities through interaction, on the basis of subjective relations.

V. Bezrukova reveals three stages in constructive project activities: pedagogical modelling (the creation of models); constructive project (the creation of a project); constructive project activities (the project itself that is more detailed, specific and close to realistic conditions). Examining modelling as one of the stages of the projection, V. Bezrukova has suggested an organizational algorithm of the project model, but the question of controllability of the project process, its evaluation and opportunity to improve efficiency remains undiscovered (Bezrukova, 1996).

From V. Genisaretsky point of view, the pedagogic process of projection consists of seven stages: ascertaining and evaluation of the results of pedagogical activity; the nomination of hypotheses about the relationship of the results with the factors of the educational process; the construction of a specific pedagogical system that is relevant to the work of the educational establishment; the creation of pedagogical system of special purpose function; the choice of the methodology of parameters measurement; comparison of the results of measuring the functioning of these systems; construction of optimized variant of the specific pedagogical system (Genisaretskij, 1988).

We are interested in the thought of G. Lebedeva, who identifies seven thematic cycles in the students training of the pedagogical projection in her study. They are a philosophical-methodological substantiation of the projection; the problem of the projection of a personality in the native pedagogy; pedagogical the essence of the pedagogical projection; the projection of the pedagogical systems; the projection of the pedagogical process; the projection of individual pedagogical technologies and pedagogical training. This approach has more theoretical than applied nature (Lebedeva, 2002).

N. Yakovleva in her studies scrutinized the as a series of sequential steps: the pedagogical invention (ideas development); the creation of a single sample (the development of a creative model); the pedagogical experiment to verify the effectiveness of the created sample (the project adjustment); creation of the final project (constructive changes in the created model) (Jakovleva, 2002).

Definition of the Essence of the Concept - "Project Competence"

From the said above it is seen that the project competence of a future teacher is regarded as an ability which is directed on the creation of the project; as scientific and practical method of studying and transforming of reality (method of practical oriented science); the form of creation which is typical for the technological culture and management culture.

To accomplish the projection that is to have the project competence, a future teacher should have certain skills that allow revealing the creative beginning of the individual. That is what reveals its productivity.

The analysis of the methodical literature has shown that there is a fairly wide range of this definition. We are interested in A. Shepilova's position, who claims that the ability to image a hasty action is based on the knowledge and previous experience (Shchepilova, 2003: 95).

In pedagogy project skills are examined from the point of view of different approaches; the place and the role of constructive and project skills in a teacher's work are revealed; the list of constructive and project skills is arranged; the recommendations to their enrichment and development are given. For example, N. Kuzmina connects project skills with the perspective planning (Kuz'mina, 1980).

G. Sorokovyh indicates that constructive activity consists of constructive informative activity (the selection and composition of the educational material, planning and construction of the educational process); structural and operational activity (planning of teachers' actions and the students' actions) and the constructional and material activity (projection of the educational and material base of the lesson) (Sorokovyh, 2013).

We agree with this position and point out that the constructive activity, which is connected with the educational work, includes the following didactic skills: (i) the projection and related perspective lesson planning; (ii) the lesson construction itself, taking into consideration all the objective and subjective realities and (iii) associated (extra curriculum, prospective) planning.

Thus, the project competence consists of project skills, which are characterized by consciousness, independence, productivity and dynamism. Their consciousness consists in making one or another action, the person is aware of the purpose of actions and manages them by means of developed skills. His independence is manifested in the ability to transfer skills from one activity to another.

The Description of the Skills Needed to Develop the Project

The efficiency of the skill is determined by its awareness that enables not only to reproduce learned actions, but also to find more effective solutions to use developed skills. The analytical skills include the ability to divide pedagogical phenomena into component elements (to be able to create a lesson; to comprehend each stage of a lesson; to find new forms and methods of presentation of a new material; the use of individual learning strategies, portfolio, computer tests, various Internet technologies; to diagnose the pedagogical phenomenon properly: the creation of a border control as a necessary part of ball-rating system that is conducted to evaluate and verify systematically the level of knowledge, practical skills and the process of learning of the educational material while studying; to find and identify the main tasks of the lesson and the methods of their optimal solutions.

In N. Ivanova's research, it is said that the necessity of the development of students' gnostic skills of scientific and methodical activity is provided by the nature of the professional activity of a modern teacher. The development of the students' skills named above is the result of obtaining the research and gnostic knowledge, skills, educational and research, educational and professional, scientific and research activities (Ivanova, 2011: 69).

The research skills such as organization of the research investigation; mastering the methods of teaching, methodology of research activities; the ability to generate original ideas; the ability to develop didactic instruments methodically competently, students' individual educational routes are no less important.

To create a certain project a teacher should have creativity and mastery. It should be said that creative skills are very important in project activities. They are related to finding our own vision in the design of a project and its implementation, views and aspirations to move away from the template, creating the organizational and methodical conditions for the development of students' creativity. The creative abilities envisage the creation and development of individual routes of studying, the development of personal portfolios, the creation of special creative environment of a lesson and extra class activities, search technologies of teaching and upbringing students, the development of interactive forms of interaction, the creation of educational products (essays, projects, papers, developing a multilevel test tasks, etc.)

To project the educational environment, we need such reflexive skills to analyze the effectiveness of the pedagogical research; the ability to evaluate pedagogical reality, self-evaluation as an indicator of reflexive self-management; the productive attitude to mistakes and failures.

On the basis of the aforesaid we can single out the following list of skills that will promote the development of the future teachers' project competence:

- analytical skills;
- gnostic skills;
- research skills;
- diagnostic skills;
- creative skills;
- reflexive skills.

To sum it up, we understand educational projection as practical oriented activity the purpose of which is to develop new educational systems and types of pedagogical activities that do not exist in practice; a new area of knowledge; applied scientific direction of pedagogy that is aimed to solve the problems of the improvement of modern educational systems; the method of regulation of pedagogical, scientific and research activities; the process of creation and realization of a educational project; the specific method of personal development; the educational technology; learning tools (upbringing). In addition it executes the supporting role in relation to other activities (Osova, 2009).

It should be mentioned that the projection and prognostication have the same aims and orientation to achievement the goals. But at the same time projection needs more severity and responsibility for the derived result that is used directly in the practice. The interaction of the projection and prognostication is that the projection as the research activity is a base for the possible revelation of new sources of the prognostication (Magsumov, 2015).

The prognostication as an intellectual procedure is used in the projection as the substantiation of the possible conditions of this or that object or phenomenon.

The construction and projection share a common basis that is characterized by the sequence of stages that help to approach the concept to its substantive implementation. In the construction there are elements of the project object on the contrary in the projection a system of interrelations of these elements is created in the development and design of the project.

The projection and modelling are interdefined because the modelling is considered as a theoretical and practical operation of the object and is widely used in the projection to create an image of an object, phenomenon or process that does not exist in reality. The procedure of the projection includes the creation of models (images) of the future that is why the modelling can be considered as a part of the projection.

It should be mentioned that the structure and content of the practical readiness of future teachers is also expressed in external (subject) skills i.e., actions that you can observe. They include

organizational and communication skills which are necessary for the development of a teacher's project competence.

The organizing activity of a future teacher ensures the inclusion of students in the various activities and in the organizing activity of a group: the usage of group and pair work. Case methods, tandem learning methods and collaborative learning are suitable for this kind of work.

A future teacher's communicative skills structurally can be presented as interconnected groups of perceptive skills, professional communicative skills in particular. A lot of researchers make attempts to determine the list of those skills that a future teacher should have. The systematization and logic order of the professional skills are carried out. We tried not only to systematize professional skills in a teacher's project activity but also to define their relationship. We consider the composition of skills in a future teacher's project and organizing activities in complex (Yalavaç, & Samur, 2016).

When considering "projection" as an imaginary and practical expression of what is possible, and what must be, it is important to characterize special groups of skills that a future teacher should be taught. We have identified the following project skills in educational activities:

▪ a clear definition of goals and objectives of a future training activity on the basis of diagnostics to identify the problem;

▪ accounting of the level of educational subject knowledge, interests, needs and opportunities of students;

▪ the search of the information due to the problems in scientific and pedagogical and methodological literature;

▪ the determination of the contents, forms, methods and means in the students' individual and collective activities;

▪ gaining different types of class activities with different upbringing activities in accordance to the practical, educational, development and upbringing tasks of a modern lesson;

▪ the usage of the system of techniques to stimulate students' cognitive activity;

▪ thinking out the conditions of the compatibility of the project developers;

▪ the cooperative with other members of the educational process (teachers, senior students, younger students) projection of the development of the creative environment;

Project skills, to our point of view, are considered to combine with other certain narrow methodical skills. We refer to them the following skills:

▪ reflexive skills: the ability to analyze the correctness of the formulated task of the lesson; the analysis of the compliance of the activities of the formulated task; the analysis of the efficiency of applied methods of the explanation, training and activation of an educational material, methods and means of the pedagogical activity; the analysis of organizational forms in accordance with the age features of students; their level of knowledge of subjects, the learning phase, the analysis of the reasons of success and failure in the process of learning activities; the analysis of the experience of your own activities;

▪ research skills: the ability to generate ideas independently, that is inventing the way of the action involving the knowledge of various industries; the ability to find missing information independently (the ability to use the Internet resources, and educational sites);

▪ the ability to find multiple solutions of a problem: the development of individual routes of learning and upbringing; the ability to put forward hypotheses; the ability to establish causal-result relationships; the ability to request the missing information timely; the ability to select the content, forms, methods and means of learning at the optimum combination; the ability to plan a system of stimulating students; the ability to plan individual forms of the students support; the ability to develop electronic-methodical support of students;

▪ group skills: the ability to plan project activities based on learning collaboration collectively; the ability to interact with any partner; the ability to provide mutual assistance in solving problems; to develop skills of intercultural communication; the ability to find and correct the mistakes in the work of the students correctly; to create the team, the group for the implementation of project activities;

▪ managerial skills: the ability to project a holistic process; the ability to plan learning and extra class activities; the ability to make decisions, predict their sequence and the end result; the analysis of the own activity, its course and outcome;

▪ communication skills: the ability to initiate the interaction, engage in a dialogue, ask questions etc.; the ability to guide the discussion; the ability to defend your point of view; the ability to find a compromise (the ability to rephrase, to use emotional semantic phrases to express your own point of view); the skills of interviewing, verbal survey;

▪ presentation skills: the skills of monologue speech; the ability to keep yourself confidently during the performance; artistic skills; the ability to use various means of visual methods in a presentation; the ability to answer unplanned questions.

The project competence is necessarily combined with organizational skills in learning activities that is why when working with students it is important not only to develop a project in theory, but also to implement it practically in life and get results.

Conclusion

The organization of a special learning to develop the project competence is essential in training students of pedagogical higher educational establishments. It requires the creation of algorithmic prescriptions to project different objects based on the generalized methods of pedagogical projection, diagnostics, goal-setting, having a symbiosis of abilities that are developed during the students training: the arrangement of the pedagogical practice documentation, diploma and term paper projects, its technical analysis and implementation. Thus, the project competence of future teachers is a combination of complex skills, the top of them are analytical, diagnostic, gnostic, creative, research and reflexive. Practical skills (organizational and communicative) are also important for the project competence. We examine the composition of skills as a component of the project competence of future teachers comprehensively.

Conflict of Interest Statement

The authors declare that they do not have any conflict of interest.

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