

# Gerontology: Preparing the Nigerian Mind for the Inevitability of Old Age.

Kobani, Doreen

Rivers State University of Science and Technology, Nkpolu – Oroworukwo.  
Faculty of Technical and Science Education  
Department of Educational Foundations (Adult and Community Education)  
[betex2006jj@yahoo.com](mailto:betex2006jj@yahoo.com) 08038942074

## ABSTRACT

This Paper examines the Concept of Gerontology and its origin, Aging and its different forms, diseases that are synonymous with declining mental, sexual and physical capacities: their causes, symptoms, treatment and preventive measures are proffered. It also gives an insight of aging in cross cultures and the universals of social behaviour relating to old age in other parts of the world. Some misconceptions and myths about the aging process must be eliminated. Education is key to changing attitudes and influencing perceptions of aging and older people. This goes for the young as well as the whole of society.

## Introduction

A great deal of activity in the course of a person's life is aimed at the eventuality of old age: dependency on others, lack of money, boredom, ill-health and so on. Old age is a mental attitude as well as a physical phenomenon. Many people have a tremendous dread of growing old. Next to the subject of death, it is the least favourite topic. The reality however is that old age is inevitable and while there is nothing inherently problematic about growing old, most nations of the world increasingly believe it to be a social problem. Every society, with no exception to Nigeria, has the responsibility of providing security, meaning and self-esteem to those who reach the conclusion of life's natural sequence as everyone must age and eventually die.

Assumptions about the elderly have led to prejudice and false notions about them. These stereotyping and negative discriminatory practices have led to Ageism. To deal with the issue of old age, it is important to recognize that all humans are characterized by their uniqueness and individual differences and the elderly are no exception to this. The Aged have been moulded by the experience of many decades. There is therefore need for everyone to be adequately informed about elderly so that we understand them and know how to relate to them in society. The transition to a positive, active and developmentally oriented view of ageing may well result from action by elderly people themselves, through the sheer force of their growing numbers and influence. The collective conscious of being elderly, as a socially unifying concept, can in that way become a positive factor. Imagine the possibilities if we create a culture informed by and supportive of old age. It is essential that we ascertain the real gains and real losses associated with aging. This cannot be done by denying old age, by focusing on only the problems or by ignoring the aged either. Carstensen (1998) Specialist in research on aging says:

If we planned and prepared for old age like we plan and prepare for middle age, we could create a world in which the last stage of life could be the most emotionally meaningful stage in life. It should be the time in life when people have the perspective that only the passage of time can afford to assess life fully, to appreciate that bad times pass and good times are precious, to reap the benefits of relationships that have spanned a lifetime and to build lives that fully reward every day.

With the onset of modern medicine the expectation is that human life will be extended and that everyone will live to a ripe old age. Like any other generational group, the elderly have their peculiar challenges but these challenges are made more complex and profound because of the basic assumption that there are no answers to the challenges of old age, no reverse, no cures, no re-assurances that can halt or prevent the process of aging even though there are scientific claims of longevity in humans in 1998 which claimed the discovery of a human gene that resets the number of replications of a cell. The telomerase gene could prolong life significantly by lengthening the telomere, or part of the chromosome involved in cell division. Even though other scientists are more skeptical, and argue that this system is also involved in preventing cancer and thus tinkering with the telomeres might cause cancer in people. However, further research in time will allow us to discover how cellular function is involved in the aging process and whether the fountain of youth has truly been discovered.

### **Gerontology: Definition and History**

Gerontology is derived from Greek: γέρων, *geron* meaning "old man"; and λόγος, *logos* meaning "speech". This literally means "to talk about old age". Gerontology therefore can be described as the study of the social, psychological and biological aspects of aging. It can also be defined as the study of late adulthood. It is distinguished from geriatrics, which is the branch of medicine that studies the health and disease of the elderly (Wikipedia, the Free Encyclopedia, 2009).

Gerontology includes studying physical, mental, and social changes in people as they age, investigating the aging process itself (biogerontology), investigating the interface of normal aging and age-related disease (geroscience), investigating the effects of our aging population on society, including the fiscal effects of pensions, entitlements, life and health insurance, and retirement planning, applying this knowledge to Policies and Programmes, including a macroscopic (i.e. government planning) and microscopic (i.e. running a home for the elderly) perspective. Gerontology is the study of the aging processes and individuals as they grow from middle age through later life (Wikipedia, the Free Encyclopedia, 2009).

The multidisciplinary nature of Gerontology means that there are a number of sub-fields, as well as associated fields such as Psychology and Sociology that also cross over into Gerontology. However, that there is an overlap should not be taken as to construe that they are the same. For example, a psychologist may specialize in early adults (and not be a gerontologist) or specialize in older adults (and be a gerontologist).

It may be said that the history of gerontology begins with agriculture; prior to this the hunter-gatherer societies that existed could only support a marginal existence: food supply was short; frequent movement a necessity. These and other reasons meant that extremely few reached 'old age'. However, it could be argued that in a society with a life expectancy of 14 (such as 10,000 BC), being 40 was old. Things changed with the coming of agriculture. A more stable food supply and the lack of frequent movement meant that humans could now survive longer, and beginning perhaps around 4000 BC, a regular segment of the population began to attain old age in places such as Mesopotamia and the Indus river valleys.

Agriculture did not simply bring a steady food supply; it also suddenly made older persons an economic benefit instead of a burden. Older persons could stay and watch the farm (or children); make pottery or jewellery, and perform social functions, such as story-telling (oral tradition, religion, etc) and teaching the younger generation techniques for farming, tool-making, etc. (Frisk, 2000). After this change, the views of elder persons in societies waxed and waned, but generally the proportion of the population over 50 or 60 remained small up until recent times with the advancements of the modern age people are able to attain better living conditions and so live for a longer period of time.

Old age was powerful in the stratified and repetitive China, in Sparta, in the Greek oligarchies, and in Rome up until the second century before Christ. It played no political part whatsoever in the periods of change, expansion or revolution. Cowgill and Holmes (1972) attempted to derive universals about social behaviour relating to old age. Among their claims:

- There is a general tendency in old age to shift toward more sedentary, more advisory and supervisory activities, to those involving more mental exertion than physical, and those directed toward group maintenance more than economic production
- In all societies, the mores prescribe some mutual responsibility within the family as between old people and their adult children
- Saving for old age appears to be a near universal desire and effort even if it is not always successful
- All societies value life and seek to prolong it even in old age

### **Justification for the Study of the Elderly**

World widely, the number of people of about 65years or older is increasing faster than ever before. Most of this increase is occurring in developed countries Carstensen (1998). The number of the elderly is growing around the world chiefly because more children reach adulthood and people are living longer. This can partly be attributed to better living conditions because of the improvement of quality of life made possible by advancements in technology.

In Nigeria, the elderly constitute a segment of the population that is not only productive but very influential to the nation's development. This can be seen in the cultural, socio-economic and political aspects of society. Therefore, the elderly should be well integrated into the nation's plans and policies. The priorities and plans of the elderly may differ from those of younger or middle-aged adults which will require creative use of the limited available resources. This will necessitate the need to study the elderly. There is the need to understand the aged in order to raise questions like "what is it like to grow old?", "what changes occur as one ages?", "why are there so many differences among people of the same age?" These and many other questions point to the need to understand the elderly and what the aging process entails for each individual.

Since at least the eighteenth century, social observers have argued that there is an inverse relation between social development and the status of older persons, a historical shift from veneration to degradation. Respect for the elderly has decreased as a proportional number of them increased in the society. Thus the elderly became viewed as a burden to society. This changing role of the elderly has also necessitated the need for their study (Cowgill and Holmes, 1972).

Older people invariably mean employment for the young. Smith in Ernest Burgess (1960) wrote on how among Native Americans age was the basis of rank and precedence, whereas in "opulent and civilized nations" its role was merely residual. Two hundred years later, Ernest Burgess, in *Aging in Western Societies* (1960), came to the same conclusion, citing urbanization and the mass production of commodities as the chief culprits, which together undermined the economic basis of the extended family and the decreased number of self-employed.

This loss of extended family support was to isolate the aged, and with their loss of decision-making power in the workplace arose the pressures for their retirement--a form of social death to create the openings for young workers that formerly occurred by death when life expectancies were shorter. Advancement, capitalism and urbanization have constituted the need to redefine the perceived usefulness of the elderly because as the society becomes re-organized to accommodate urban industrial and technological development, the role of the elderly greatly diminishes. Their value becomes based on their economic ability rather than accrued wisdom and experience.

### **The Aging Process**

Aging is a syndrome of changes that are deleterious, progressive, universal and thus far, irreversible Strehler in Jegede (2003). Aging damage occurs to molecules (DNA, proteins, lipids), to cells and to organs. Diseases of old age (diseases which increase in frequency with age, such as arthritis, osteoporosis, heart disease, cancer, Alzheimer's Disease, etc.) are often distinguished from aging per se. But even if the aging process is distinct from the diseases of aging, it is nonetheless true that the damage associated with the aging process increases the probability that diseases of old age will occur.

Some gerontologists prefer to use the word senescence because aging implies that the passage of time necessarily results in deterioration (biological entropy) which is certainly not true during the early, developmental, time of life (before the age of 10 or 12 in humans). A human life is often divided into various phases. They include, pre-conception (Ovum, Spermatozoon), conception (fertilization), pre-birth (conception to 9months), infancy (birth to 2years), childhood (2 to 12years), adolescence (13 to 19years), early adulthood (20 to 39 years), middle adulthood (40 to 59 years), late adulthood (60 years and above).

Some signs of aging include, depreciation in physical structure and strength, manifested in wrinkles, liverspots on the skin, grey or white hair, hair loss, reduced height because of spinal disertrophy which leads to a sagging posture, teeth loss leading to shrunken jaw line, sagging chin and breasts as a result of loss of elastic protein collagen, loss of agility and steadiness of limbs, reduced ability to think clearly, decreased sexual functioning in both men and women, impairment in visual, hearing, speech and motor responses. Internally, functioning ability of most organs begin to depreciate.

Jegede (2003) states that the aging process can be viewed from three perspectives; biological aging, sociological aging and psychological aging. Biological aging deals with the activities of the vital organ systems are normally coordinated by physiological processes within the body and the sense organs. The effect of the aging process therefore, actually results in the decline in the co-ordinating abilities of these physiological processes and the sense organs. The effect therefore, of aging brings about physio-sensory decline of the body.

Biological changes manifest as from late adulthood upwards. For example, the average amount of blood pumped by the heart drops from about 6.9 litres (7.3 quarts) per minute at age 20 to only 3.5 litres (3.7 quarts) pumped per minute at age 85. The immune system also changes with age. A healthy immune system protects the body against bacteria, viruses, and other harmful agents by producing disease-fighting proteins known as antibodies. A healthy immune system also prevents the growth of abnormal cells, which can become cancerous. However, with advancing age, the ability of the immune system to carry out these protective functions is diminished. The rate of antibody production may drop by as much as eighty percent between age 20 and 85. Psychological aging refers to those abilities that people adopt to adapt to changing environmental demands. The indices of psychological aging include feelings, motivation, memory, emotions, experiences and self-identity. Generally, there is a continuous but non-uniform process of psychological aging as more life events emerge in the life of an individual.

Sociological aging refers to the specific set of roles and attitudes adopted by individuals in relation to other members of the society to which they belong as they age. The criteria used in judging social aging are the behaviours and habits of the individual. Cavanaugh (1993) posits that aging is not a single process. He identifies three processes namely; primary aging, secondary aging and tertiary aging. Primary aging refers to the normal, disease free movement across adulthood. These changes result because of wear and tear of vital organs and

processes. These changes lead to aging and eventually to death. For example, the wrinkling of the skin and the greying of hair. Secondary aging refers to developmental changes resulting from terminal illness or diseases which prevent normal body functioning.

Tertiary aging refers to the rapid loss that occurs shortly before death. Losses in the form of effects of death of a loved one, effects of war or natural disaster, e.t.c. These changes manifest as from age 64. However, actual time when aging begins differ from person to person. Aging is inevitable but does not always mean it should be accompanied by diseases. However, common diseases have become more frequent in the elderly which could be due to many reasons. Many of these diseases are either chronic or progressive in nature. Kon (2010) suggests three classifications between age and disease. There are diseases that are universal, progressive and irreversible with age. An example of this is Atherosclerosis (A condition in which an artery wall thickens as a result of a build-up of fatty materials such as cholesterol). The second are diseases common with old age but not universal and not inevitable while the third are diseases not necessarily related to age but may have more negative impact as age progresses.

### **Common Diseases and Conditions of the Elderly**

Cancer strikes at any age but is most common in the later years. Nearly two thirds of all elderly people are afflicted with cancer at some point in their lives. Although there are different types of cancers, some are more common in the elderly than in others. For instance, lung cancer and breast cancer. Cancer is largely controllable through prevention, early detection, and treatment. Colorectal cancer is the second leading cause of cancer-related deaths in the United States, accounting for 10% of all cancer deaths (Konwin, 2009). The risk of developing colorectal cancer increases with advancing age. Lack of physical activity, low fruit and vegetable intake, a low-fibre diet, obesity, alcohol consumption, and tobacco use may contribute to the risk for colorectal cancer. Breast Cancer is best detected in its earliest, most treatable stage by mammography. Seventy-six percent of all diagnosed cases of breast cancer are among women aged 50 years or older (Kon, 2010).

Diabetes is another serious, costly, and increasingly common chronic elderly disease. For most people, diabetes is due to bad lifestyle as they consume too much sugar and fat. However, in the elderly is because the body does not secrete sufficient amounts of insulin to keep the blood sugar levels down. Diabetes in the elderly is incurable and can only be controlled through medication or diet. Early detection, improved delivery of care, and better self-management are the key strategies for preventing much of the burden of diabetes. Symptoms include increased thirst, constant hunger, frequent urination, weight loss, itching, fatigue, changes in vision and slow healing of injuries. Treatment and control includes planned diet, exercise, insulin shots or oral medication (Konwin, 2009).

Dementia is quite common among elderly. It occurs due to degradation of the nerves endings that send impulses to the brain. There are around 100 types of dementia but the most common is Alzheimer's disease, vascular dementia and dementia with Lewy bodies, where the nerve cells in the brain get destroyed. Till today researchers are trying to find out what causes dementia as it will allow them to treat it. But as of today, there is little that can be done to treat the disease. Parkinson's disease affects the nerve cells that go to the brain and why it occurs is still a mystery.

Parkinson's is a disease that afflicts the elderly and it is characterized by uncontrollable tremors and shaking. In the later stages, it affects the brain. Osteoarthritis is a degenerative joint disease of the aged, a product of wear and tear on the joints over the years. Poor posture and obesity contributing causes as are heredity and trauma. There is no specific cure for arthritis but the pain and swelling can be controlled. Obesity among adults has doubled since 1980. People who are obese or overweight are at increased risk for heart disease, high blood pressure, diabetes, arthritis-related disabilities, and some cancers.

Blood vessels are made up of arteries, veins and capillaries. Fat deposits in lining around the heart may form a continuous sheet causing some heart muscles and valves to thicken and stiffen. The effect is that the remaining good muscles must work harder. Thus the amount of blood the heart pumps reduces as one ages. The walls of the arteries harden due to calcification (deposition of calcium salts) and the replacement of elastic fibres with less elastic ones. This may result in heart attacks and other heart related problems (Best, 2009). Three health-related behaviours-tobacco use, lack of physical activity, and poor nutrition contribute markedly to heart disease. Modifying these behaviours is critical for both preventing and controlling heart disease.

Strokes occur when the blood supply to a part of the brain tissue is cut off and, as a result, the nerve cells in that part of the brain cannot function. When this happens, the part of the body controlled by these nerve cells cannot function either. Whenever the blood supply is cut off from an area, small neighbouring arteries get larger and takeover of the work of the damaged artery. In this way, nerve cells that have been temporarily put out of order may recover and that part of the body affected by the stroke may eventually improve or even return to normal (Konwin, 2009). Some elderly persons may experience specific mental disorders that are not part of normal aging including depression, anxiety disorders and dementia including Alzheimer's disease which can be

debilitating and severely affect an older adult's quality of life. Cognitive or brain health is an important part of healthy aging. Cognitive health refers to maintaining and improving mental skills such as learning, memory, decision-making, and planning. Many older adults mistakenly believe becoming "senile" or forgetting is a normal part of aging. Although one in four older adults experiences these events (known collectively as cognitive decline), they are not a normal part of healthy aging. There are certain changes in cognitive health that occur as you age. Normal changes usually mean a slower pace of learning and the need for new information to be repeated. While the majority of older adults will experience these normal changes in cognition, some older adults will experience cognitive decline. Older adults with cognitive decline have a higher risk of developing dementia later in life. Although research has not found a way to prevent dementia or Alzheimer's disease, cognitive decline may be preventable (Phanjoo, 2000).

Recent research suggests that being physically active, controlling hypertension, and engaging in social activities may help maintain and improve cognitive health. Older adults who complain that their "mind is going" may actually be losing a part of their brain along with their memory, according to "the Science Daily" (2008). The study found people who complained of significant memory problems but still had normal performance on memory tests had reduced gray matter density in their brains even though they were not diagnosed with any cognitive impairment and suggests that those who complain of significant memory problems should be evaluated and closely monitored over time. New research also shows that how well people get around and keep their balance in old age is linked to the severity of changes happening in their brains. White matter changes, also called leukoaraiosis, are frequently seen in older people and differ in severity. Walking difficulties and falls are major symptoms of people with white matter changes and a significant cause of illness and death in the elderly. The biggest problem some people encounter as they age is a loss of short term memory. Characterizing memory loss as inevitable as we age is incorrect as research has shown that although some elderly do not have the same retention powers as their younger counterparts, some of them have an accurate memory of events and can retain them.

#### **Sexual attitude and activities in the Elderly**

Masters and Johnson (1966) in conducting research on the sexual responsiveness of older adults found that given a state of reasonably good health and the availability of an interested and interesting partner, there was no absolute age at which sexual abilities disappeared. While they noted that there were specific changes to the patterns of male and female sexual responses with aging – for example, it takes older men longer to become aroused and they typically require more direct genital stimulation, and the speed and amount of lubrication tends to diminish with age as well. They noted that many older men and women are perfectly capable of excitement and orgasm well into their 70s and beyond, a finding that has been confirmed in population based epidemiological research on sexual function in the elderly. When a young woman is sexually stimulated, her vagina promptly expands to accommodate a penis. However, the vagina of an older woman's vagina becomes thin and smooth. There is a slight reduction in the size of the clitoris but it responds in exactly the same way as in a younger woman. Women aged 50 to 70 years report that their orgasms changed (Masters and Johnson, 1966). They have 4 or 5 such contractions at orgasm rather than 8 to 12 reported by orgasmic younger women. Some older women report severe pain in orgasm. To this effect, Postmenopausal women may experience painful intercourse due to a decrease in vaginal lubrication (Okoye, 2007). This problem is easily remedied with the use of non petroleum-based jellies. Masters & Johnson (1966) pointed out that the male's sexual responsiveness wanes as he ages. Men may experience less sexual urgency, delayed or partial erection, and less defined ejaculation because the body's secretion of the male hormone testosterone decreases with age and the conduction of nerve impulses is less rapid.

#### **Recommendations**

According to Best (2009), there are certain predictors that can lead to successful aging. They are regular physical activity, social engagement, freedom from or effective management of chronic illness and a feeling of self – worth.

An annual check-up is especially important in later years and should not be neglected. Attention should be given to enlarged lymph nodes of the neck, armpits and groin. Veins and arteries are to be examined as well as the knees and arches. Tests for high blood pressure, diabetes and tumours should be made and any recent unusual symptoms should be reported to the doctor. The following are anti-agers which will be useful to the aging individual.

- A clove of garlic a day thins the blood and so prevents cancer and other heart diseases.
- Ginger alleviates rheumatism, boosts digestive and circulatory systems of the elderly.
- Nuts control the cholesterol level, are rich in potassium, copper, zinc, iron, selenium, magnesium and prevent cancer.

- Avocado is an anti-ager that helps reduce a bad type of cholesterol in the body. It contains Vitamin E. It helps prevent fluid retention and high blood pressure.
- Water is also an anti-ager and healer. It has been known to cure diabetes, migraines, constipation etc. Eight glasses or more every day.

### Conclusion

Chinmoy (2007) says the secret of maintaining vitality and newness is to live in the heart and not in the mind. As Chinmoy (2007) says:

The moment you think of your old age, you destroy all your inspiration, aspiration, joy and enthusiasm. If the mind is used, then you are finished. When you are ten years old, the mind will make you feel that you are as old as ninety years.

Although everyone may have different views of what successful aging is, according to Best (2009) the best indicator of aging successful was not physical health, but a positive mental attitude. Plato said: He who is of a calm and happy nature will hardly feel the pressure of age, but to him who is of an opposite disposition; youth and age are equally a burden. In the long term, preparation for old age must be integrated into the overall process of education and it must start in the schools, where it should be integrated into the curriculum. Such a Process corresponds to the life-long process of aging, the efforts for public health by the Government in the country, working capacity and the joy of living up to a ripe old age.

### REFERIENCES

- Best, B. (2009). *Mechanisms of Aging*. (<http://www.benbest.com>)
- Burgess, E. (1960). *Aging in Western Societies*. Chicago: University of Chicago Press.
- Carstensen, L. (1998). *Myths and Realities of Aging*. (<http://news-service.stanford.edu.htm>)
- Cavanaugh, L. (1993). *Adult Development and Aging*. (end Ed) Books/Cite Publishers. Pacific Californk.
- Chinmoy, S. (2007). *Does Age matter?* ([www.Srichinmoyongs.com](http://www.Srichinmoyongs.com))
- Cowgill, D. O & Holmes, L. D (1972). *Social Gerontology-Aging and Modernization: Old Age across Cultures and Time*. Abe Books.com. Mishawaka: (<http://www.trinity.edu/ger-cul.htm>)
- Department of Health and Human Services (2008). Centres for Disease Control and Prevention. Aging – Health Information for Older Adults. (<http://www.gov/Aging/info.htm>)
- Doud, W. (2009). *Old Age*. (<http://www.realtime.net/oldage.htm>)
- Eitner, S., Eitner, A., Schmidt, U.J. (2007). *Preparing for Old Age: Necessity, possibilities, contents, limits*. (<http://www.ncbi.nlm.nih.gov.org>)
- Fitzwater, E. L. (2009). *Perspectives on Aging*. (<http://www.netwellness.org>)
- Frisk, R. (2000). *Roles of the elderly*. (<http://www.mnsu.edu/emuseum/cultural/aging/Roles.html>).
- Jegade, S. (2003). *The Adult Learner – A Psychosocial analysis*. Lagos: University of Lagos Press.
- Kamau, A. (2006). *Is Memory loss Inevitable as we age? – Old Age aging memory loss remember better modern medicine*. (<http://articles.directorym.net>)
- Kon, M.W. (2010). *Mitral Valve insufficiency: emedicinePediatrics: Cardiac Disease and Critical Care Medicine*. (<http://emedicine.medscape.com>)
- Konwin, G. (2009). *Shocking Statistics for Elderly Diseases*. (<http://ezinearticles.com>)
- Masters, W.H. & Johnson, V.E. (1966). *Human Sexual Response*. Toronto. New York: Bartam Books.
- McGraw, H. (2009). *Theories of Aging*. (<http://www.dushkin.com>)
- Okoye, R.C. (2007). *Understanding the biology of menopause and Prevention of early Aging*. Port Harcourt. Save a life Publishers.
- Phanjoo, L. A. (2000). *Advances in Psychiatric Treatment. Sexual dysfunction in Old Age*. (<http://apt.rcpsych.org>)
- Science Daily: March 2008. *Problems Getting around in Old age? Blame your brain*. (<http://www.sciencedaily.com>)
- Thomas, W.H. (2009). *Aging well Magazine - What is Old Age for?* Spring City. Great Valley Publishing Co., Inc.
- Wikipedia-The Free Encyclopedia. (2009). *Gerontology*. (<http://en.wikipedia.org>).

The IISTE is a pioneer in the Open-Access hosting service and academic event management. The aim of the firm is Accelerating Global Knowledge Sharing.

More information about the firm can be found on the homepage:  
<http://www.iiste.org>

## CALL FOR JOURNAL PAPERS

There are more than 30 peer-reviewed academic journals hosted under the hosting platform.

**Prospective authors of journals can find the submission instruction on the following page:** <http://www.iiste.org/journals/> All the journals articles are available online to the readers all over the world without financial, legal, or technical barriers other than those inseparable from gaining access to the internet itself. Paper version of the journals is also available upon request of readers and authors.

## MORE RESOURCES

Book publication information: <http://www.iiste.org/book/>

## IISTE Knowledge Sharing Partners

EBSCO, Index Copernicus, Ulrich's Periodicals Directory, JournalTOCS, PKP Open Archives Harvester, Bielefeld Academic Search Engine, Elektronische Zeitschriftenbibliothek EZB, Open J-Gate, OCLC WorldCat, Universe Digital Library, NewJour, Google Scholar

