Summary. *The article researches prerequisites of development of pre-school education in western lands of Ukraine as part of Austrian-Hungarian Empire, peculiarities of formation and functioning of state women's teachers seminaries on the basis of which pre-school teachers professional training was grounded.*

Keywords: *pre-school education, kindergarten with distinction, teachers seminary, frebel course, teachers practical training.*

УДК 378.147:811.111

Orlova N.

STRUCTURAL AND FUNCTIONAL ASPECTS OF SCIENTIFIC LITERACY WITHIN THE POSTGRADUATE COURSES OF ACADEMIC COMMUNICATION IN ENGLISH

Анотація. *У статті аналізуються та узагальнюються існуючі поняття наукової грамотності, а також піднімаються питання важливості та необхідності для викладачів розвивати, покращувати і вдосконалювати навички наукової грамотності в межах курсу наукової комунікації англійською мовою для студентів магістратури.*

Ключові слова: *наукова грамотність, наукова комунікація, науково грамотний студент.*

Introduction. A postgraduate course in academic communication has been designed to teach students the art of academic communication in English. Since the ways in which scientists or academics communicate must be taught, universities offer courses designed to teach or improve these communication skills. As academic communication is an area of interpersonal skills that focuses on appropriate use of language within higher educational settings, the goal of the course is to prepare students for scientific and academic careers. Postgraduate students will be taught advanced vocabulary, proper grammar, reading comprehension and verbal expression. They will learn how to write in a formal tone and politely address their readers, whether it is a professor or their peer. In addition to developing high-level communication skills, they might also learn about academia-specific topics, as well as how to write book and article reviews, research papers and laboratory reports. They will practice an important element of academic communication that is how to formulate a thesis or academic argument. Students are expected to be able to interpret science writing and understand basic scientific explanations. Hence, here arise certain aspects concerning scientific literacy as it is closely connected to academic communication.

Previous researches and literature overview. Many attempts have been made to define and describe the concept of scientific literacy since the late 1950s when it meant a desired publics' familiarity with the science. As the term evolved, the definition of it became wider showing a larger function of scientific literacy. Among the scientists who have been studying this concept, we can name R. Miller, J. Osborn, L. Phillips, S.P. Norris, R.W. Bybee, J. Holbrook, M. Rannikmae and others. However, despite the fact that the concept have been studied and defined in various settings and by different scholars, there is no universal approach in describing the broad concept.

The aim of the article. Hence, being based on existing theoretical structure, the article aims to analyse and generalise the notions of scientific literacy, as well as to raise the issues concerning the importance and necessity for teachers to develop, improve and master scientific literacy skills within the postgraduate course of academic communication in English.

The main body. Even the most brilliant discoveries, research or experiment findings, if not communicated widely and accurately, is of little value.

As means of conveying scientific information, spreading and sharing ideas and thoughts, as well as means of connecting people, communication is vital in the sphere of science. In general, communication is the activity of conveying information through the exchange of ideas, intentions, attitudes, feelings, expectations, perceptions, or commands, by speech, gestures, writings,

behaviour and possibly by other means such as electromagnetic, chemical or physical phenomena. It is the meaningful exchange of information between two or more participants. Communication requires a sender, a message, a medium and a recipient, although the receiver does not have to be present or aware of the sender's intent to communicate at the time of communication; thus communication can occur across vast distances in time and space.

Communication with others involves three primary steps:

THOUGHT (a concept, idea, information etc);

ENCODING (sending a message to a receiver in words or other symbols);

DECODING (translating the words and symbols into a concept or information).

The communication process is complete once the receiver understands the sender's message. [Table 1.] Thus, effective communication occurs only if the receiver comprehends the exact information or idea that the sender intended to transmit. That is why, communication requires that communicating parties share an area of communicative commonality. Because in this two-way process of reaching mutual understanding participants not only exchange (encode-decode) information, ideas and feelings but also create and share meaning. Among types of communication crucial from the viewpoint of science, scientific communication, scholarly communication and academic communication are distinguished.

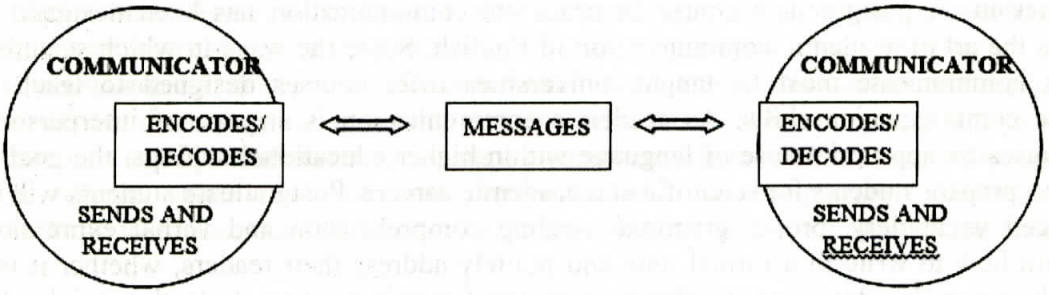

Table 1. Model of Communication

Scientific communication is the explicit intercultural discourse that explains the significance of scientific research, the nature of science, the doing science, and the content of science. Scientific communication is an interactive process. It aims telling the world about the significance of research results/ findings. [Table 2.] Scientific communication generally refers to public communication presenting science-related topics to non-experts.

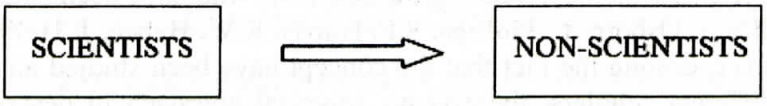

Table 2. Scientific Communication Participants

It includes science exhibitions, journalism, political and media production. [Table 3.] The aim of scientific communication is to generate support for scientific research or study, or to inform decision-making, including political and ethical thinking.

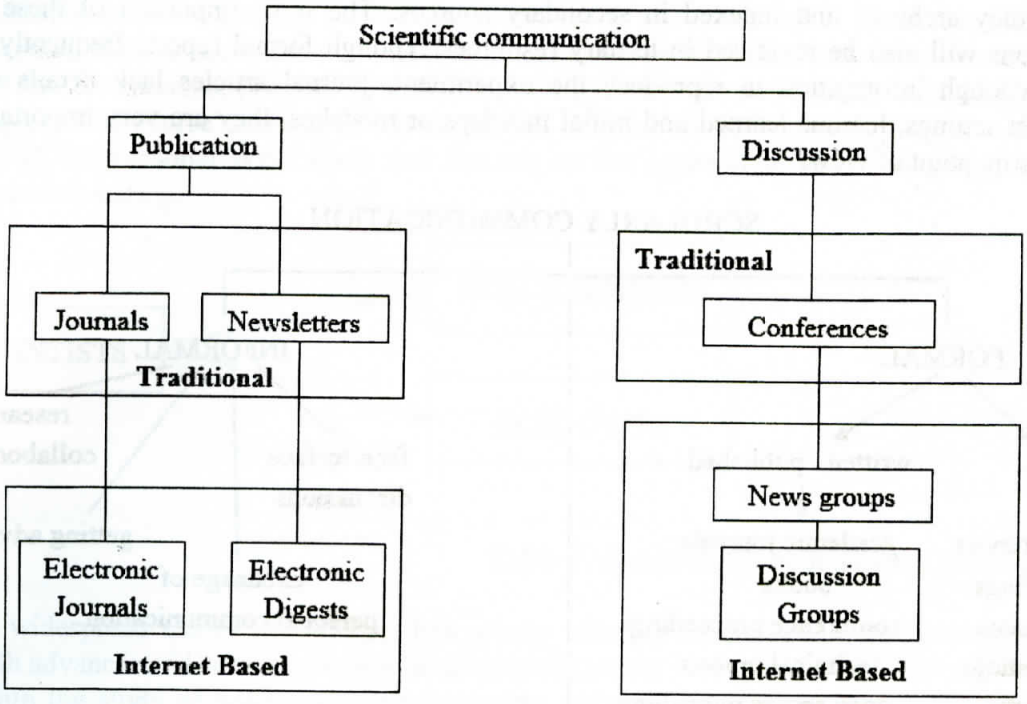

Table 3. Constructs of Scientific Communication.

Besides the goal of communicating science between non-sciences, scientific communication sometimes describes communication between scientists through scientific journals, meetings, conferences and so on.[Table 4.] In order to avoid ambiguity, scientific communication between qualified professional experts, scientists, and peer researchers is defined as scholarly scientific communication, or, shorter, scholarly communication. Scholarly communication is the process of academics, scholars, and researchers sharing and publishing their research findings so that they are available to the wider academic community and beyond.

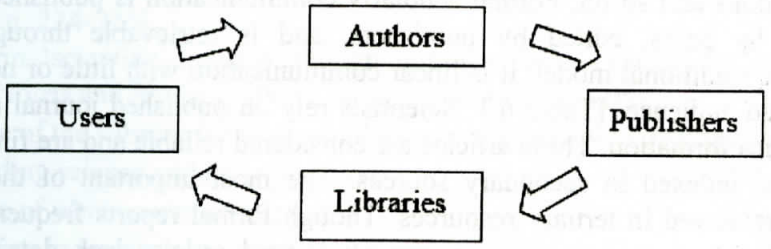

Table 4. Scholarly communication participants

Another definition of scholarly communication is the creation, transformation, dissemination and preservation of knowledge related to teaching, research and scholarly endeavours. [Table 5.] Scholarly communication, as opposed to scientific communication, is imbedded in the context of the scholarly tradition of the discipline and is shaped by the disciplinary rituals and perspectives.

Formal communication uses public and permanent vehicles such as books, journals, and monographs. Formal scholarly communication can research articles, letters, memos, conferences, technical reports, edited books and so on. Formal scholarly communication is published material, that has been reviewed by peers, edited by publishers, and is retrievable through various information systems. In the traditional model, it is linear communication with little or no feedback possible created for a broad audience. [Table 6.] Scientists rely on published journal articles for

recognition, reward, and idea formation. These articles are considered reliable and are findable later because they archived and indexed in secondary sources. The most important of these formal publications will also be reviewed in tertiary resources. Though formal reports frequently do not provide enough information to reproduce the experiment; journal articles lack details such as equipment settings, lessons learned and initial missteps or mistakes, they are very important from the scientific point of view.

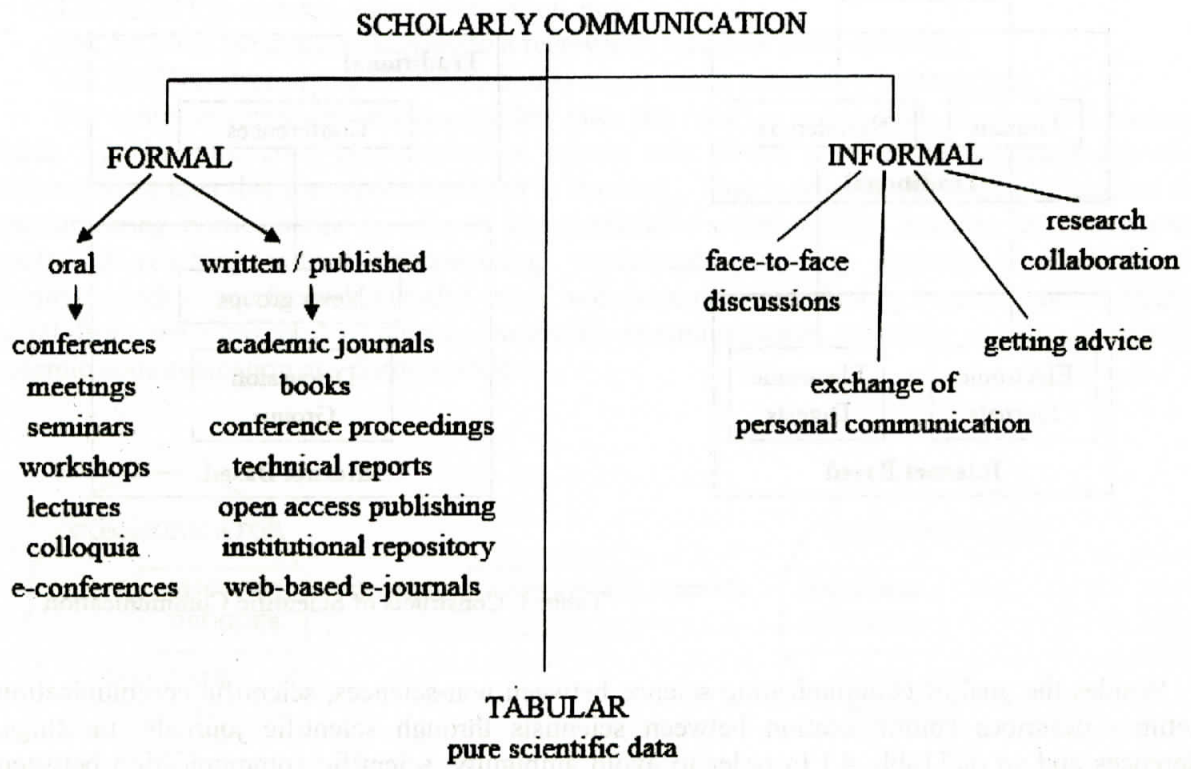

Table 6. Constructs of Scholarly Communication

Formal communication uses public and permanent vehicles such as books, journals, and monographs. Formal scholarly communication can research articles, letters, memos, conferences, technical reports, edited books and so on. Formal scholarly communication is published material, that has been reviewed by peers, edited by publishers, and is retrievable through various information systems. In the traditional model, it is linear communication with little or no feedback possible created for a broad audience. [Table 6.] Scientists rely on published journal articles for recognition, reward, and idea formation. These articles are considered reliable and are findable later because they archived and indexed in secondary sources. The most important of these formal publications will also be reviewed in tertiary resources. Though formal reports frequently do not provide enough information to reproduce the experiment; journal articles lack details such as equipment settings, lessons learned and initial missteps or mistakes, they are very important from the scientific point of view.

The goal of the formal process is to publish a journal article in peer-reviewed journals, but much of the content of journal articles has been previously communicated via informal channels, including reports and conference presentations. Communicating through informal means includes face-to-face discussions, exchange of personal communication, sharing views, opinions, etc. Informal scholarly communication is anything that does not fit into the definition of formal scholarly communication; that is it, it can take place anytime, anywhere, in any format. Scientists communicate informally to collaborate on research, to learn about new methods or theories, to hear about new results, to get advice, to co-author formal publication. The most common method of scholarly communication is by writing up the findings of research into an article to be published in a scholarly journal; however, there are many other methods, such as publishing a book, a book

chapter, conference paper, and multimedia formats such as sound and video recording. When a scholar needs to publish a new discovery, he or she must use a particular channel of communication. Here, academic communication refers to the methods in which ideas are distributed among scholars or students. [Table 7.] Academic information is disseminated in scientific journals, newsgroups, online course management systems, and research libraries. Academic communication is an area of interpersonal skills study that focuses on the appropriate use of language within a higher education setting.

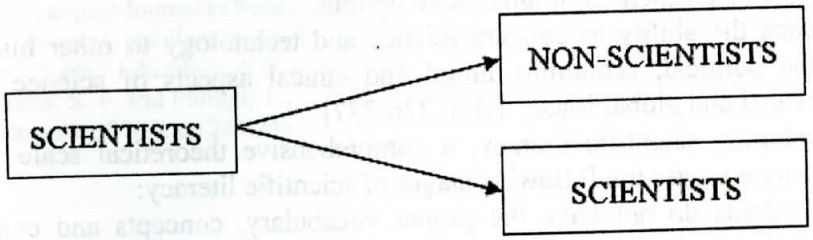

Table 7. Academic Communication Participants

The widespread use of the Internet has greatly affected academic communication and has caused both advances and complications in academic discourse.

Within the study of academic communication, emphasis may be placed on how students can effectively convey complex ideas within their area of study and through a variety of modalities, including writing, presentation and conversation. This form of communication is based upon completing in-depth research and then presenting the information learned in an understandable and professional manner. Academic communication involves presenting ideas effectively and formal in a scholastic environment. Some people intuitively know the proper way to communicate in different setting. Academic communication refers to methods of communication that are highly structured and generally used in pedagogical settings. Academic communication can include the words and structures used to express ideas, as well as the methods by which ideas are disseminated. In 2003, Norris and Phillips dispute about how scientific literacy is beyond knowledge in science and requires more understanding about interconnectedness of elements of content, their sources and their implications. They extend their conception to include the reasoning required to comprehend, interpret, analyse and criticise. [4, p. 224-225]

The term 'scientific literacy' though not used with exactly the same meaning, includes, according to Norris and Phillips (2003), the following components:

* Knowledge of the substantive content of science and ability to distinguish from non-science;
* Understanding science and its applications;
* Knowledge of what counts as science;
* Independence in learning science;
* Ability to think scientifically;
* Ability to use scientific knowledge in problem solving;
* Knowledge needed for intelligent participation in science-based issues;
* Understanding the nature of science, including its relationship with culture;
* Appreciation of and comfort with science, including its wonder and curiosity;
* Knowledge of the risks and benefits of science, and
* Ability to think critically about science and to deal with scientific expertise. [4, p. 228]

Holbrook and Rannikmae (2009) suggest that a scientifically literate person needs intellectual competence, considering other important attributes, which are as following:

1) Intellectual component (Higher Order Thinking Skills) encompasses ability to use concepts of science in solving everyday problems and making responsible decisions in everyday life; to locate, collect, analyse, and evaluate sources of scientific information and to use them properly; to

explain natural phenomena testable for their validity; to defend decisions and actions using rational argument based on evidence.

2) Attitudinal that includes ability to display curiosity about the natural and human-made world; to value scientific research and technological problem solving; to remain open to new evidence; and to engage in science foe excitement and possibly explanations.

3) Societal comprising the ability to weigh the benefits / burden of scientific development; to recognise the strengths and limitations of science; and to engage in responsible personal and civic actions after weighing the possible consequences of alternative options.

4) Interdisciplinary includes the ability to connect science and technology to other human endeavour; and to consider the political, economic, moral and ethical aspects of science and technology as they relate to personal and global issues. [3, p.276-277]

As for the steps in developing scientific literacy, a comprehensive theoretical scale was proposed by Bybee in 1997. It encompasses the following stages of scientific literacy:

1) Scientific illiteracy: Students do not have the proper vocabulary, concepts and cannot respond to a reasonable question about science.

2) Nominal scientific literacy: Students can recognise some basic concepts related to science, but have a low level of understanding.

3) Functional scientific literacy: Students can correctly describe a concept but still with limited understanding of it.

4) Conceptual scientific literacy: Students develop some understanding of the major conceptual schemes of a discipline and demonstrate general understanding of science.

5) Multidimensional scientific literacy: Students develop certain understanding and appreciation of science. They can establish links within scientific disciplines. [1, 83-84]

As scientific literacy involves the ability to evaluate information critically, it is a main construct within the domain of scientific and academic communication. Holbrook and Rannikmae (2003) suggest that scientific literacy is generally defined as scientific attitudes and abilities to construct understanding of science, to apply the ideas to realistic problems and issues involving science, technology, society and the environment, as well as to inform and persuade other people to take action based on these science ideas. Consequently, this means the ability to follow scientific and academic discourse, the ability to make science personally relevant. Student should acquire the ability to engage and to conduct exploratory activities, to locate and retrieve information, to draw evidence-based conclusions, and to present the acquired knowledge. It is crucial for students to be aware that common meanings of such words a "theory", "proof", "evidence", "variable" etc. differ from their precise meanings in the context of scientific discourse. Scientific literacy has the following four attributes: knowledge of basic textbooks (scientific factual knowledge); an understanding of scientific methods; appreciation of the positive outcomes of science and technology; rejected superstitious beliefs such as astrology, numerology etc.

In order to be convinced of the correctness in the developing scientific literate students, tutors should teach more effectively, selecting essential topics of scientific literacy in general and one in the certain sphere. The curriculum should focus on a core learning that means educators must select what to teach wisely, and concentrate on fewer topics taught in a variety of contexts and provide students deeper understanding of their area of study. Tutors should seek ways and means to measure levels of scientific literacy of their students on regular basis. Their assessment procedure should be accurately designed and contain certain methods and forms to measure students' abilities to: 1) recognise concepts in English (nominal literacy); 2) define key concepts in English (functional literacy); 3) use their understanding of their subject-specific concepts to explain phenomena in their sphere of study (conceptual literacy); 4) use their subject-specific knowledge to read and analyse an article, or to scrutinise information provided in internet resources (multidimensional literacy).

Conclusions. The article has shown the importance and necessity for teachers to develop, improve and master scientific literacy skills within the postgraduate course of academic communication in English. Enhancing of scientific literacy should occur by developing an ability to

use evidence-based scientific knowledge and skills productively, with relevance for everyday life and future career, in solving meaningful scientific problems and making responsible scientific decisions.

References

1. Bybee, R. W., (1997). Achieving scientific literacy: from purposes to practices, Portsmouth, NH, Heimann Publishing, pp. 82-86.
2. Holbrook, J. and Rannikmae, M., (2007). The nature of science education for enhancing scientific literacy. International Journal of Science Education, 29(11), pp 1347 -1362.
3. Holbrook, J. and Rannikmae, M., (2009). The meaning of scientific literacy. International Journal of Environmental and Science Education, 4(3), pp 275-288.
4. Norris, S. P. and Phillips, L., (2003). How literacy in its fundamental sense is central to scientific literacy. Science Education, 87(2), pp 224-240.

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Аннотация. *В статье анализируются и обобщаются уже существующие понятия научной грамотности, а также поднимаются вопросы, касающиеся важности и необходимости развивать, улучшать и совершенствовать навыки научной грамотности в рамках курса научной коммуникации на английском языке для студентов магистратуры.*

Ключевые слова: *научная грамотность, научная коммуникация, научно-грамотный студент.*

Summary: *The article analyses and generalises the existing notions of scientific literacy, as well as raises the issues concerning the importance and necessity for educators to develop, improve and master scientific literacy skills within the postgraduate course of academic communication in English.*

Key words: *scientific literacy, academic communication, scientifically literate student.*

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Бондаренко Ю.

РОЗВИТОК ІДЕЙ ПРИНЦИПУ ПРИРОДОВІДПОВІДНОСТІ В НІМЕЦЬКІЙ ПЕДАГОГІЦІ XVIII – XX ст.

Анотація. *У статті простежується розвиток природовідповідного виховання в німецькій педагогіці XVIII – XX століття, аналізується своєрідність бачення розвитку принципу природовідповідності в педагогічній концепції німецьких педагогів – І. Г. Песталоцці, Ф. Дістервега, І. Кампе, І. Базедова, Ф. Фребеля, Р. Штайнера.*

Ключові слова: *природовідповідне виховання, теорія вільного виховання, принцип природо відповідності, філантропізм, антропософія, неогуманізм.*

Постановка проблеми. Ще не так давно існувала стандартна формула – щоб дитина виросла всебічно розвиненою, потрібно щоб вона закінчила школу з поглибленим вивченням англійської мови і музичну школу. Безумовно, це дуже корисно, але чи достатньо для того, щоб вступити в життя, де необхідні, наприклад, емоційна зрілість, вміння спілкуватися, здоровий глузд і почуття відповідальності? Спроба виховати дітей на ідентичних принципах, змусити дітей до стандартного навчання за єдиними формами виховання – величезна помилка, яка свідчить про безпорадність людства в розумінні своєї природивідповідності, адже природне середовище вимагало від людини тільки такої поведінки і дії, які допомогли б їй в подальшій освіті, тому зосередження людства, в умовах сьогодення, на особистості дитини, визнання й необхідність вивчення ідеї природовідповідного виховання дитини стали об'єктивним явищем педагогічної реальності й підгрунтям для її подальшого розвитку.

Для сучасних науковців і педагогів пріоритетного значення набуває необхідність вивчення, переосмислення та узагальнення ціннісних засад ідей природовідповідного виховання надбаннями зарубіжної педагогіки, що відповідає стратегічним завданням, визначеними такими державними документами, як Закон України «Про освіту», Державна