

# THE USAGE OF DIGITAL RESOURCES IN TEACHING AND RESEARCHING (ON THE EXAMPLE OF THE UNIVERSITY PROJECTS)

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**Abstract.** *The 21<sup>st</sup> century shifted the world communities to an “electronic” stage of evolution. Drastic changes can be visualized in literature, linguistics and other humanitarian sciences. The greatest attention is paid to the promotion of linguistic researches, which are oriented towards electronic documenting of the language as well as on the intensive usage of digital methodologies and modern technologies. The reliance on these “technics” enables contemporary Georgian scientists to achieve principally new results and verify different models or hypotheses. Despite these circumstances, a lot must be done in the sphere of Kartvelology. The paper presents the university projects, which are oriented towards:*

- *involvement of students in researching activities dealing with the corpus-building;*
- *promotion of the development of digital Kartvelology;*
- *facilitation of creation of Georgian and foreign scholars’ digital library and text-corpus;*
- *development of Georgian scientific meta-language, etc.*

*Therefore, promotion of digitalization, development of scientific meta-language, facilitation of the preservation of well-known scholars’ works, creation of digital libraries and establishment of modern methods crucial for the promotion of up-to-date teaching processes – these are the main issues of our paper and integral problems of today’s educational world. The methodology of research includes observation, analysis and evaluation of ongoing projects and their already-achieved/future outcomes. Certain prospects are visualised.*

**Keywords:** *corpus-building, digitalization, documenting, Kartvelology, meta-language, text.*

## Introduction

The 21<sup>st</sup> century can be nominated as the era of digitalization and computer-aided transformations - the transformations, which are presented in every sphere of life. Drastic changes are visualized in literature, linguistics and other humanitarian sciences. One of the best outcomes of the technological transformation of humanities is the development of researches oriented towards the creation of corpus linguistics, which “has undergone a remarkable renaissance

in recent years. From being a marginalised approach used largely in English linguistics, and more specifically in studies of English grammar, corpus linguistics has started to widen its scope” (McEnery & Wilson, 2005).

It can be definitely stated that in the 21<sup>st</sup> century “computer technology has revolutionised the fields of linguistic research (descriptive linguistics) and applied linguistics (language teaching and learning) with the advent of corpus linguistics” (Kamariah, 2017). Many scholars believe that corpora is an increasingly popular field, “which involves the analysis of (usually) very large collections of electronically stored texts, aided by computer software. The word *corpus* is Latin for *body* – a corpus is therefore a ‘body’ of texts” (Baker, 2010). “The texts (spoken or written production of language) are assembled to form a large collection of authentic texts called a corpus (plural-corpora) which comes in various sizes” (Kamariah, 2017).

An outstanding importance of corpus linguistics is vividly seen during its involvement in teaching and researching processes, especially, in such areas as historical linguistics, diachronic studies, language acquisition (*classroom concordancing* or *data-driven learning* (Johns, 1991)), lexicography, etc. Nowadays, the majority of progressive researches are oriented towards the usage of digital resources. It has already been mentioned that computer-aided studies are especially popular in linguistics, because it deals with a wide spectrum of an empiric material. An electronic documenting of the language as well as the intensive usage of modern technologies outline new perspectives of researching via facilitating the reinterpretation of certain theories and verification of already-existed results, which serve as a prerequisite of the development of any branch of the science.

The given paper presents the innovative university projects, which are oriented towards:

- the involvement of students in researching activities dealing with the corpus-building;
- the promotion of the development of digital Kartvelology;
- the facilitation of the creation of well-known Georgian and foreign scholars’ digital library and text-corpus;
- the development of Georgian scientific meta-language;
- the involvement of digital resources in the process of teaching, etc.

The methodology of the research includes observation, analysis and evaluation of the ongoing projects and their already-achieved/future outcomes. Certain prospects are visualised and assessed. The implementation of these projects will facilitate the rearing of digitally-skilled and research-oriented future generations.

Therefore, they can serve as exemplary models for those universities of post-soviet countries, which strive to implement innovative student-oriented and digitally-enriched strategies of teaching, researching and investigating.

### **From the history of the development of corpus-based researches in Georgia**

The end of the 20<sup>th</sup> century became a significant stage of Georgia's history. The transition from socialism to capitalism issued urgent challenges in different spheres of life. Among them is linguistics. "The process of the development of the common global network demanded the placing of information on new carriers. Accordingly, linguists faced the necessity of the creation of electronic resources" (Tandashvili & Purtskhvanidze, 2011). The utilization of these resources during the teaching-investigating processes has been positively assessed by the scholars of different countries: "The use of ICT is underpinning our students' education (Fullan, 2013)... As a matter of fact, ICT has improved the ways of accessing knowledge, researching, communicating, socialising and succeeding in all levels of education" (Camilleri & Camilleri).

It is noteworthy that during the recent years, one of the most utilized tools has become language corpora, "which have many different affordances and applications... This typically includes the application of frequency data in determining the sequence in which linguistic items should be introduced, in identifying key multiword units and a wide range of lexico-semantic patterns... This essentially indirect approach (Römer, 2011) to corpus data is taken by syllabus designers, materials writers, lexicographers and testers" (Boulton & Thomas, 2012).

The utilization of new technologies "can be useful to rethink access to cultural heritage digital resources and their use or re-use by different publics such as teachers, students..." (Ferrara et al., 2013). The widely-spread models of implementation of electronic devices in teaching-researching processes are:

- the extended metadata model, "which has been developed by covering methodological resources and learning objects in order to increase their accessibility and usage in teaching process" (Kubilinskiene & Dagiene, 2013);
- concept mapping – used for the creation of corpora;
- the cognitive frameworks – "used by high school science, technology, engineering, and mathematics (STEM) educators as they search for digital resources and conceptualize the integration of digital resources into their teaching" (Carlson & Reidy, 2004), etc.

In it noteworthy that the creation of the Georgian digital era was initiated by the establishment of Georgian-German scientific relations, which can be regarded

as a foundation of the development of corpus-based researches in Georgia. The major activities started in 1994-1998 with the sojourns of two Georgian professors (V. Imnaishvili & Z. Sarjveladze) in Frankfurt am Main. An initiator of Georgian-German scientific relations was prominent German Caucasiologist Jost Gippert, whose inaugural dissertation on the study of Iranian loanwords in Armenian and Georgian (1991) vividly revealed his early interest in the Georgian language. J. Gippert created “the first electronic resources for the Georgian language within the framework of TITUS – an electronic platform of the Indo-European languages” (Tandashvili & Purtskhvanidze, 2011). He actively collaborated with Georgian scholars, who worked at different higher educational institutions of Georgia. The history reveals the products of this cooperation - several bilateral projects oriented towards the creation of corpora. The most prominent product - Georgian National Corpus (GNC) - which “covers the complete time range from the earliest attestations of written Georgian in the 5th century C.E. up to the present day has evolved from several corpus building initiatives that have been realized since the late 1980s, mostly in joint endeavours of German and Georgian partners. This is true, first of all, for the text database of the TITUS and ARMAZI projects in Frankfurt” (Gippert & Tandashvili, 2015) and two additional pillars: “the GEKKO corpus run by Paul Meurer in Bergen... and the extensive corpus of dialectal varieties of spoken modern Georgian (‘Georgian Dialect Corpus’, GDC) compiled under the direction of Marina Beridze at the Arnold Chikobava Institute of Linguistics in Tbilisi” (Gippert & Tandashvili, 2015). The major importance of GNC lies in the fact that it unites the work of scientists and students (of TSU). The work of the latter comprises digitalization of Georgian literary monuments and annotation of already-existed texts i.e. the enrichment of electronic data with a linguistic meta-information, which is presented on different independent levels. As a result, students become research-oriented and digitally-qualified.

In addition to GNC, Georgia’s digital reality has encompassed several projects authorized by different higher educational institutions, for instance:

- Projects of Ilia State University - Georgian Language Corpus; The Epigraphic Corpus of Georgian; Prosopography of Georgia, etc.
- Summer schools organized by Batumi State University and Goethe University Frankfurt (GUF) - Digital Humanities and Language Documentation; Digital Humanities and Kartvelology, etc.
- Projects initiated by Tbilisi State University (TSU) – Winter School “Digital Humanities – Kartvelology and the Challenges of the 21<sup>st</sup> century” (organized by TSU and GUF); Development and Introduction of Multilingual Education Programs at Universities of Georgia and Ukraine; Akaki Shanidze’s Digital Library and Text-corpus, etc.

The given list shows the progress of Georgia's ongoing digitalising processes. However, the significance of certain projects requires a more in-depth analysis.

### **Contemporary Corpus-based Researches**

Nowadays, one of the major aspirations of Tbilisi State University is the integration into European higher education area. The major catalyst of the given process is the implementation of bilateral/multilateral research projects and joint teaching programs created in cooperation with foreign higher educational institutions. TSU has already taken certain steps in this respect. "In terms of the cooperation with Volkswagen Foundation following three doctoral programs are prepared: digital humanities, a mixed doctoral program in mathematics and a doctoral program in the management of education" (The first cross-national doctoral program in digital humanities).

It is noteworthy that 24 February 2016 was a remarkable day for TSU. On this day, the university hosted a grand opening of the preparatory tour of the Cross-National Doctoral School "Digital Humanities" leading towards the implementation of one of the possible outcomes of Georgian-German relations - a joint doctoral program oriented towards a computer-aided research in Georgia and generally, in the Caucasus region. The major focus of the program is planned to be Caucasian languages, literatures, history as well as other aspects of humanities and social sciences (Caucasiology, Kartvelology, Caucasian history, etc.). The doctoral students will be jointly supervised by Georgian and foreign scholars on the basis of the co-tutelage. Their research and scientific background will be supported and broadened via two types of training facilities - workshops and individual lectures. The given type of PhD studies will be innovative for the Georgian students. It will fuel their aspiration towards the acquisition of western educational practices. However, the preparatory tour has already enriched candidates' digital skills. It comprised three workshops and two qualifying rounds held in Georgia and Germany. The workshops encompassed the prominent western scholars' presentations demonstrating two types of empirical studies (descriptive or observational studies) covering such research questions/aspects as digital resources (utilization and structuring of corpora, audio-visual facilities, etc.), structuring of computer-aided researches, harvesting, digital-based perspectives, field-working, mapping, creation of word-banks, etc. The qualifying rounds were oriented towards the identification of possible candidates for the doctoral program on a competitive basis. All contestants presented their topics in 15-minute presentations, followed by 10-minute discussions with one of two selection committees. As a result, 27 candidates were chosen out of 54 during the first round. Twelve of them will get scholarship in case of the implementation of

the joint program. The contest revealed that a great number of Georgian students (54) were interested in the acquisition of digital skills via becoming a student of Cross-National Doctoral School. The presentations of the contestants indicated to their background – the attendance of summer and winter schools in digital humanities or Kartvelology. Therefore, the phases of the methodology of the given project focuses on the following procedures: 1. Participation in winter/summer schools in digital humanities or Kartvelology; 2. Participation in the preparatory tour comprising presentations demonstrating different research questions of an empirical study; 3. PhD studies. It is noteworthy that after the fulfilment of all stages foreseen by the given project, Georgia will have a group of progressive, digitally-skilled youngsters, which means a lot to a small developing country.

The creation of the Georgian digital era was facilitated not only by Georgian-German scientific relations, but by Georgian-Austrian cooperation as well. The initiator of the given cooperation was Prof. Hugo Schuchardt – “an eminent Austrian linguist, a well-known specialist of the Roman languages... a full member of the Georgian linguistic society” (Imnaishvili, 2004). History states that H. Schuchardt “got interested in the Georgian language in the 80<sup>th</sup> of the 19<sup>th</sup> century. In one of his last letters he indicated that Georgian was a sympathetic and an interesting language for him” (Imnaishvili, 2004). H. Schuchardt played an important role in the development of the Georgian manuscript studies. At the end of the 19<sup>th</sup> century, after a prolonged trading peripeteia, he acquired five Georgian manuscripts and three single papers - precious monuments of Georgian material culture, which had been stolen from Mount Sinai. After professor’s death, the manuscripts as well as certain estate materials were preserved at the University of Graz. They attracted Georgian society’s attention throughout the previous century. Several Professors of TSU (V. Imnaishvili, D. Tvaltvdze, S. Sarjveladze, M. Machkhaneli, etc.) visited Graz and looked through the manuscripts. However, they were not accessible to a wide circle of scholars.

The digital era of the 21<sup>st</sup> century brought novelties in this respect. “In the late nineties... first steps were taken to process and publish estate material”<sup>1</sup> (Hugo Schuchardt Archiv). The materials were initially processed by the staff of the university. However, during 2012-2015 the important project “Network of Knowledge” was initiated by eminent scholar Bernhard Hurch. The project was funded by “Austrian Science Fund (FWF) under project number P 24400-G15”<sup>2</sup> (Hugo Schuchardt Archiv). It encompassed the creation of the website “Hugo Schuchardt Archiv” presenting a lot of works of the prominent scholar in a digital

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<sup>1</sup> In den späten 90er Jahren... wurden erste Schritte zur Aufarbeitung und Publikation von Nachlaßmaterialien gesetzt.

<sup>2</sup> Fonds zur Förderung der wissenschaftlichen Forschung in Österreich (FWF) unter der Projektnummer P 24400-G15.

format. During the preparation of the website the Austrian scientists were assisted by the scholars of different countries. Among them were professors of TSU, who visited Graz within the framework of mobility projects. As a result of a hard multilateral work, the world society acquired a precious product:

1. “The electronic publication of H. Schuchardt’s complete works with accompanying secondary literature and other relevant biographical and bibliographic materials;
2. The processing and electronic recording of a handwritten estate;
3. The letter database, which compiles the correspondence relevant for scientific and research history and electronically presents it with metadata;
4. H. Schuchardt's materials for the contextualization and impact story”<sup>3</sup> (Hugo Schuchardt Archiv).

It is noteworthy that the digitalization of H. Schuchardt’s heritage will make a significant impact on the development of the following branches of Georgian science: historical linguistics, manuscript studies, lexicology, history, sociolinguistics, etc. Certain materials of the archive can be included in the syllabi of the courses taught at TSU. Moreover, they will be successfully used by PhD students and scientists during working on their theses, monographs, etc.

The above mentioned indicates that initially digitalising processes were carried out within the framework of joint projects. However, nowadays the implementation of up-to-date digital processing is led by students and scientists of TSU. One of the recently carried out projects is “A. Shanidze’s digital library and text-corpus” initiated by the students of the direction of Georgian philology. Within the framework of the project, its participants digitalised, processed and enriched with meta-information the major works of eminent Georgian scholar A. Shanidze. The project was mainly focused on carrying out the following procedures:

1. Empirical studies i.e. collection and analysis of the primary data on the basis of the observations and experiences;
2. Processing of the materials: the creation of electronic versions of texts in accordance with UNICODE i.e. transformation and converting of texts into a digital format; an inner-structural processing of a text from the point of view of referencing i.e. a textual markup; the insertion of relevant meta-data in a special base enabling a customer to find the materials of a corpus according to the relevant marks;

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<sup>3</sup> 1. Die elektronische Veröffentlichung von Schuchardts Gesamtwerk mit der dazugehörigen Sekundärliteratur und anderen relevanten biographischen und bibliographischen Materialien; 2. Die Bearbeitung und elektronische Erfassung des handschriftlichen Nachlasses; 3. Die Briefdatenbank, die die wissenschaftlich und forschungshistorisch relevanten Korrespondenzen aufarbeitet und mit Metadaten versehen elektronisch präsentiert; 4. Materialien zur Kontextualisierung und Wirkungsgeschichte Schuchardts.

3. Presentation of final results to the university audience/supposed customers of the products of the project.

The involvement in digital processing was the greatest experience for the students in terms of enhancing professional skills in researching, group working and processing digital resources. After the completion of the project, its participants will be able to enrich the created digital library and text-corpus with new materials (texts, audio/video and photo materials). Therefore, it will enable the scholars and students specialised in the Georgian philology, Kartvelology and related branches to use A. Shanidze's works on every stage of studying or investigating. New perspectives of researching and knowledge acquisition will be opened for them.

Besides the creation of digital projects, TSU is oriented towards the implementation of digitally-related teaching courses, which use e-books, databases, corpora, e-archives, audio-video materials, etc. Within the framework of these courses (palaeography, history of literature, codicology, reviewing and referencing of the English text, etc.) students process materials taken from databases and actively use corpus-methods for the preparation of their theses or presentations. The given methodology of teaching gradually gains a foothold.

## **Conclusions**

The 21<sup>st</sup> century poses new challenges before the educational bodies of the world. TSU as a leading higher education institution of the Caucasus region aspires towards the implementation of innovative strategies via the creation of bilateral projects and innovative teaching courses oriented to the utilization of digital resources: software, databases, corpora, e-books, e-archives, audio-video materials, etc. The intensive utilization of the given facilities has certain disadvantages. The lack of electronic devices cannot insure an appropriate support of digitalising processes. Moreover, the limited availability of training courses prevents educators from the adaption of their teaching methodologies to innovative learning styles. Therefore, we believe that only an efficient collaboration with foreign partners and implementation of bilateral projects (similar to the above-discussed ones) can solve these problems. As a result, Georgia and other developing countries will rear progressive, digitally-skilled and research-oriented future generations.

## **Summary**

“Digital libraries and digital archives are the information management systems for storing, indexing, searching, accessing, curating and preserving digital resources which manage our cultural and scientific knowledge heritage (KH)” (Agosti et al., 2018). The prominent



scientific centers and educational institutions of the world strive to implement digital resources in their scientific life in order to enhance teaching, researching and investigating processes. TSU as a leading educational body of the Caucasus region shares the innovative tendencies of prominent institutions. Nowadays, it faces an intensive implementation of projects oriented towards the creation and utilization of digital resources (the so-called electronic resources): software, databases, corpora, e-books, e-archives, audio-video materials, etc.

The given paper discusses three university projects. Two of them (*Hugo Schuchardt Archiv* and *Akaki Shanidze's digital library and text-corpus*) are oriented to the creation of digital archives and databases of eminent scholars, who played an important role in the scientific life of the Georgian society. The open accessibility to their works, correspondence, manuscripts, postcards, drafts and other items of heritage will make a significant impact on the development of the following branches of Georgian science: historical linguistics, manuscript studies, lexicology, history, sociolinguistics, etc. Scholars and students specialised in the Georgian philology, Kartvelology and related branches will use digitally-presented materials on every stage of studying and investigating.

The greatest attention must be paid to the fact that two above-discussed projects (*The preparatory tour of the Cross-National Doctoral School "Digital Humanities"* and *Akaki Shanidze's digital library and text-corpus*) have a student-oriented character. Their major actors are students, who enhance their professional skills in project-making, researching, individual or group working and processing digital resources. Therefore, the highlighted projects can serve as exemplary models for those universities of the developing countries, which strive to implement innovative student-oriented and digitally-enriched strategies of teaching and researching.

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