Complex Skills Development through Digital Qualification Assessment: Survey Study for European and Oriental Languages Programs

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Abstract: The workflow of the university summative assessment process was significantly disrupted in the year 2020 by the global pandemic and quarantine measures. Qualification assessment for university Foreign Languages programs, as a complex framework procedure (exams, final project presentation, review, appeal), was fully transformed into the digital format. The study discloses the context and models of the transformation of complex skillsets, necessary for the COVID-19 emergency education measures. The study is based on the identification of various complex competency principles, derivative of 21st-century skills for university education stakeholders, and projected digital literacy requirements. Correspondence between the 21st-century skills framework, Competences 2020 framework, and Global Skills 2025 framework is estimated through the revised Bloom's taxonomy of educational goals. The study objective is to analyse the case of complex skills application for Digital Final Qualification Assessment at Borys Grinchenko Kyiv University, Ukraine (European and Oriental Languages programs), conducted in the timeframe of the first-wave 2020 quarantine. The inquiry results disclose and measure the efficiency of complex soft skills and corresponding digital skills, necessary for a successful Final qualification assessment procedure.

1 INTRODUCTION

The global pandemic and subsequent quarantine measures and restrictions have posed an array of challenges to the structure and procedure of university summative assessment process. Qualification assessment for Foreign Languages major programs in particular is a strict regimen process that involves different stages requiring activation of an array of individual complex skills and complex framework skillsets.

According to the comprehensive estimations of the study of transformative trends in society, networking and education in the framework of the COVID-19 pandemic (Makhachashvili, Semenist, et al, 2020), the educational sphere is faced with the need to disclose the following overarching *research questions*: a) how adaptation of the existent educational scenarios to digital, remote and blended formats is possible; b) how activation of comprehensive complex skillsets, otherwise latent or underutilized in the educational process is possible; c) how ICT competence and digital literacy of all participants of the educational process is enhanced in the lockdown framework.

This investigation **aims to identify** various groups of complex digital skills and communication practices, activated by qualification assessment complex activities for all participants (students, faculty, referees).The primary vehicle to attain the inquiry **objective** is the review of the applied case and best practices of Borys Grinchenko Kyiv University Digital Final Qualification Assessment for students of European (Spanish, French, Italian, English) and Oriental (Mandarin Chinese, Japanese) Languages major programs, employed in the year 2020 due to quarantine measures. The survey and efficiency

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evaluation of different ICT tools is used to assess the translation of complex real-life qualification assessment procedures into online blended format.

The study theoretical premise is based on the range of related works on various complex competency principles, derivative of 21st century skills (Abbot 2013; Dos Reis 2015; Morze et al, 2016) for university staff members and projected digital literacy requirements.

A *complex skill* is generally understood *as a skill requiring to process lots of information and make lots of decisions simultaneously* (Wulf, 2002). A comprehensive correspondence between 21st century skills framework, Competences 2020 framework and the newly introduced Global Skills 2025 framework (WEF, 2020) has been devised by the authorial team in terms of a vaster institutional inquiry (Makhachashvili, Semenist, et al, 2020) - Table 1:

Table 1: 21st Century Complex Skills Frameworks Correspondence.

21st CENTURY SKILLS	**COMPETENCES 2020**	**GLOBAL SKILLS 2025**
Critical thinking	Complex problem solving Critical thinking Argumentation and decision making	Critical thinking and analysis
Learning and innovation Flexibility and adaptability ICT-literacy	Cognitive flexibility Creativity	Creativity, originality and initiative Active learning and learning strategies
Communication Collaboration	Integration Negotiation Teamwork	Leadership and social influence Coordination and time management
Initiative and drive	Human resources management	Attention to detail, trustworthiness Self-management
Social skills	Emotional intellect	Emotional intelligence Coordination and time management Reasoning and ideation

In the educational process management, the most commonly applied framework of educational goals structure and subsequent skills acquisition is the Bloom's taxonomy (Bloom, 1956; Anderson, 2001) – *Remembering, Understanding, Application, Analysis, Evaluation, Creation*. The taxonomy elements can be distributed on a scale of Lower Order Thinking Skills (LOTS) and Higher Order Thinking Skills (Evans 2020) in the following way (Figure 1):

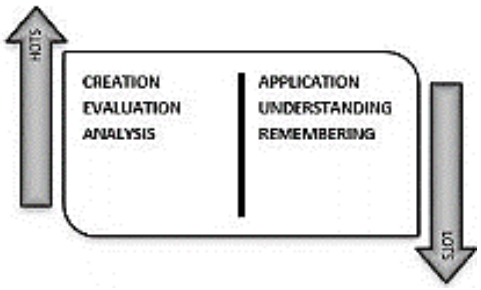

Figure 1: Bloom's Taxonomy Order of Thinking Skills Structure.

Subsequently, in order to discover a comprehensive way of assorted 21st century skills allocation within the complex educational process and separate educational procedures, according to this study estimations, it is possible to refer the critical complex skills to various tiers of the educational goals taxonomy (Figure 2):

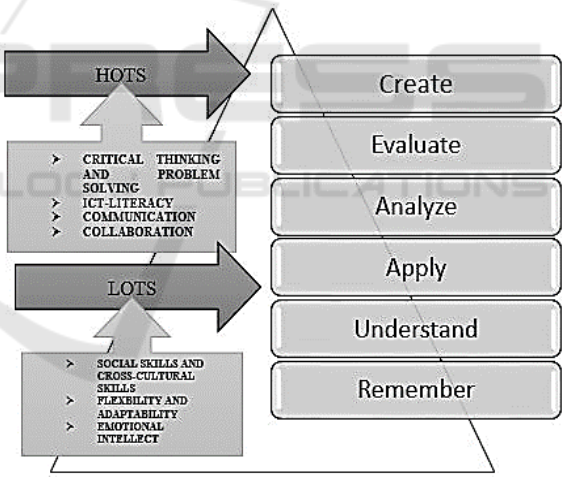

Figure 2: Bloom's taxonomy and 21st century complex skills correlation scheme.

As evident from the scheme above, the nature of core skills (social skills, emotional intellect, collaboration, communication, ICT-literacy), necessary for educational goals achievement, is *communicative*.

For the purposes of this study, in lieu of the COVID-19 digital transformations, imposed on the educational process in the area of Foreign languages acquisition, a unified framework of correspondence between the components of a crucial communicative competence (Hymes, 1972), comprising of a complex

skillset, and various aspects of ICT competence (comprising of a complex skillset) in Liberal Arts (Ecompetences, 2020), utilized in the educational process, has been elaborated (Figure 3):

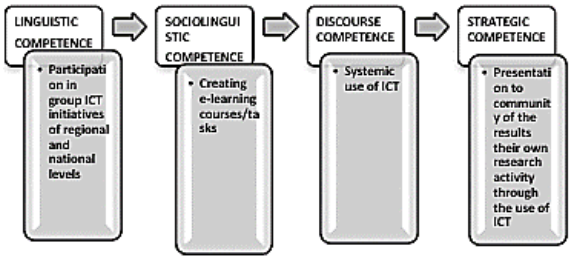

Figure 3: Correspondence Between Communicative Competence and ICT Competence in Liberal Arts.

The following study aims to identify, among other parameters, challenges for actual and underdeveloped complex skills (hard, technical and soft), that participants of the educational process encountered through Final Qualification Assessment in programs of European and Oriental Languages.

2 FINDINGS

2.1 Comprehensive Profile of Final Qualification Assessment for Foreign Languages Programs as Complex Framework Activity

Qualification assessment for Foreign Languages major programs is profiled as a mandatory educational scenario that involves different stages (oral and written exams, final project viva, internal and external review) and is carried out as a complex uniform framework.

According to the Law of Ukraine "On Higher Education" (Zakon, 2019), qualification assessment is the establishment in compliance of learning outcomes (scientific or creative work) of higher education students with the requirements of the educational (scientific, educational and creative) program and / or the single state qualifying exam.

The form of final qualification assessment of students is defined by the state standards of education and is reflected in the curricula of the Free Economic Zone. Usually state final qualification has a two-tier structure: 1) State exam; 2) Defence (viva) of qualification (bachelor's or master's) paper.

State standards of education provide for the existence and observance of rules and requirements for the procedure of state qualification assessment. In addition, the defence of the qualification paper or project contains propaedeutic procedures designed to obtain the basis for admission of students to the defence (Zakon, 2019).

In the context of this study it is suggested, that the complex structure of Final Qualification Assessment regimen of activities, tasks and communication can be profiled into the following mandatory components:

1) Pre-assessment regimen;

2) Assessment process regimen;

3) Post-assessment regimen.

The law mandated regimen of the Final Qualification Assessment would habitually comprise of a state examination and presentation of qualifying projects at a meeting of the State Examination Committee (SEC). The prerequisite of the Qualification Assessment is documented feedback on the work of the graduate form a supervisor and at least one external review by a scholar from the teaching staff, who works in the institutions of the Free Economic Zone and is a specialist in the subject of the diploma. The defence procedure consists of a 5-8 minutes' presentation by the probate graduate and questions. The procedure is open and accessible to the public. The results are discussed by SEC right after and announced to the graduates. The open appeal of the Final Qualification Assessment results can be filed immediately.

Through the COVID-19 pandemic lockdown timeframe *all elements of the Final Qualification Assessment at Borys Grinchenko Kyiv University for European and Oriental Languages programs have been relegated to the digital, remote or blended format with the use of ICT tools*.

The qualification assessment regimen was adapted through the first iteration (May-June 2020) to digital format as a framework (a legal procedure that results in the degree confirmation of a student), the string of consecutive activities according to the legal procedure described in the profile above, the "ritual" scenario - an uplifting and sombre experience for the students (Makhachashvili, Semenist, et al, 2020). In this study the Qualification Assessment for foreign languages at Borys Grinchenko Kyiv University transference model to digital format in the form of a comprehensive is revised to accommodate the complex framework structure (Figure 4):

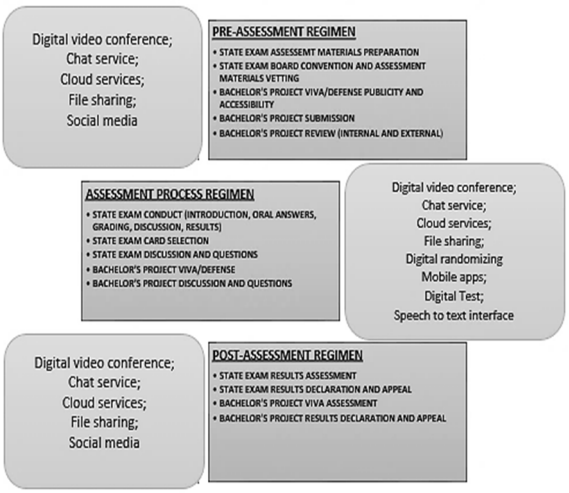

Figure 4: Frame of Final Qualification assessment comprehensive transformation into digital communicative format.

According to the model above, a set of digital equivalent communication activities is attributed to each component of the Final Qualification Assessment framework: 1) Pre-assessment regimen (video-conferencing, chat communication, cloud-based services, file-sharing services, social media); 2) Assessment regimen (video-conferencing, chat communication, cloud-based services, mobile apps, digital testing engines, speech to text conversion, social media); 3) Post-assessment regimen (video-conferencing, chat communication, cloud-based services, social media).

According to our observations, based on the case study of Borys Grinchenko Kyiv University, the conversion of Final Qualification Assessment for Foreign Languages programs into the digital format as a complex framework educational scenario is subject to the educational goals taxonomy 2.0 (Churches 2008) structuring in terms of activities, employed on each stage of the procedure and ICT tools utilized (Figure 5):

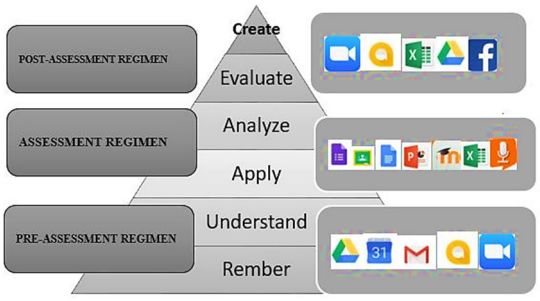

Figure 5: Final Qualification Assessment Complex Framework, educational goals taxonomy and sample ICT tools correlation.

As is evident from the model devised, Digital Final Qualification Pre-assessment regimen corresponds to the activation of low to medium order complex skills by all participants of the (understanding, remembering, application), whereas assessment regimen proper and post-assessment activities in the digital format corresponds to the activation of the high order complex skills (analysis, evaluation, creativity) via utilization of more sophisticated ICT tools and digital communicative practices.

2.2 Complex Skills for Digital Final Qualification Assessment in the Framework of COVID-19: Survey Study

2.2.1 Survey Overview: Instrument and Sample

The study implements the mixed method approach (Almalki 2016) – a proportional arrangement of quantitative and qualitative inquiry used to assess in-depth aspects of Final Qualification Assessment complex transformation into digital format.

A survey was conducted among the participants of the Final Qualification Assessment at Borys Grinchenko Kyiv University foreign language programmes (Spanish, French, Italian, English, Mandarin Chinese, Japanese major) in order to evaluate the efficiency of qualification assessment transfer into digital format via various ICT tools employed and assorted complex soft and hard skills activation. The survey structure was informed by the Final Qualification Assessment activity profile.

The following stakeholders of the digital Final Qualification Assessment were included into the survey as respondents: Students of senior year of bachelor's programme (53,4%); Assessment board members (15,5%); Faculty members (who took part in digital qualification assessment preparation and conduct) (20,7%); Bachelor project referees and supervisors (8,6%).

59 respondents total of all groups took part in the survey. The sample is exhaustively limited to the number of Bachelor level graduates in the Foreign Languages programs studied. The choice of respondent groups corresponded to the variation or similarity of tasks, performed through Final Qualification Assessment and, subsequently, the variation and similarity of ICT tools used.

The respondents in all groups were affiliated with the European and Oriental foreign language Bachelor's programmes in proportional distribution: Spanish major programme - 32,8%, Japanese major programme - 19%, Mandarin Chinese major programme - 22,4%, French major programme - 15,5%, Italian major programme - 15,5%, English major programme - 8,6%.

2.2.2 Complex Activities and Complex Skills in Digital Final Qualification Assessment for European and Oriental Languages Programs

The elaborated model of Final Qualification assessment complex transformation into digital communicative format allowed the respondents to identify the following most prominent activities, derivative of the Final Qualification Assessment framework profile, requiring the arrangement of complex skills across all ICT tools used throughout the digital qualification assessment process. Previous qualitative assessment (Makhachashvili, Semenist, et al, 2020) allowed to single out such complex multi-domain activities: Communication (synchronous); Communication (asynchronous); Collaboration; Information/file sharing; Summative assessment; Formative assessment; Peer review; Presentation; Speech quality assessment; Brainstorming.

Respondents from European languages programs identify Information sharing as an overwhelmingly prominent complex activity (59,1% of respondents) across all ICT tools used for Final Qualification Assessment (Figure 6).

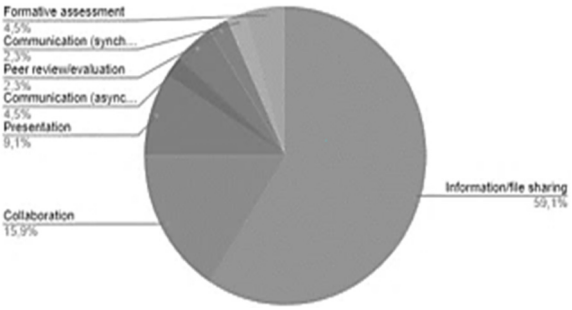

Figure 6: Activities prominent for ICT tools in Finale Qualification Assessment. European languages program.

For respondents of Oriental languages programs Speech quality assessment features equally prominent to Information sharing (28,6% of respondents) across identified ICT tools (Figure 7):

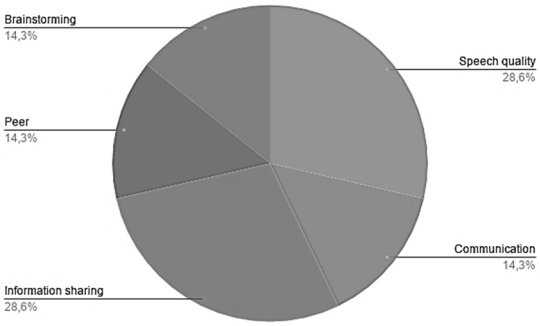

Figure 7: Activities prominent for ICT tools in Finale Qualification Assessment. Oriental languages program.

This correspondence in evaluation of complex activities is interpreted as being due to the phonetical and tonal features of Mandarin Chinese and Japanese languages being essential to meaning comprehension and decoding, which is hard to recreate and evaluate in a digital communicative environment.

Information sharing and presentation are considered dominant complex activities for such types of digital tools as email, Google services, Microsoft Office Toolkit. Synchronous and asynchronous communication, and collaboration are scored proportionally among email services, learning management systems and various video conference services.

The tools that feature summative assessment as a prominent complex activity are Google forms and LMS Moodle. Formative assessment as a type of activity features but does not dominate evaluation of ICT tools used qualification assessment process.

Digital literacy as a complex skill, activated via different educational activities has been identified in the survey. *Digital literacy is understood primarily as the ability to use information and communication technologies to find, evaluate, create, and communicate information, requiring both cognitive and technical skills* (DQ Report, 2019).

Advanced digital literacy as the requirement for qualification assessment ICT tools efficiency is attributed to such instruments as learning management systems, Microsoft Office Toolkit and social media platforms. *Intermediate digital literacy* is required predominantly for such instruments as Microsoft Office Toolkit, screen sharing interface, online randomizer, automated testing system, learning management system. *Elementary digital literacy* level is assessed as dominant for such tools as email, google disc, video conferencing, speech to text interfaces and social media platforms.

Previous qualitative assessment (Makhachashvili, Semenist, et al, 2020) allowed to single out such complex skills and competences, activated by ICT tools for the digital qualification assessment, drawn

from various relevant 21st century skills frameworks have been identified: Communication; Collaboration; Team work; Digital literacy; Emotional intellect; Interdisciplinary skills; Critical thinking; Leadership; Flexibility and Adaptability; Decision making; Learning and Innovation skills.

Complex soft skills are prioritized differently by participants of digital Qualification assessment of the European languages program (Figure 8) and Oriental languages program (Figure 9):

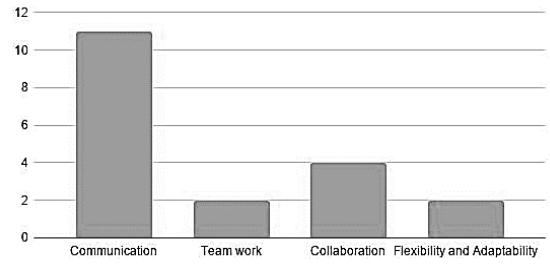

Figure 8: Soft skills for ICT/digital tools in digital qualification assessment process for European languages program. Sample evaluation card.

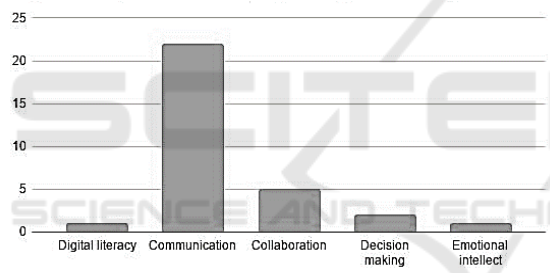

Figure 9: Soft skills for ICT/digital tools in digital qualification assessment process for European languages program. Sample evaluation card.

European languages programs stakeholders identify Communication, Collaboration, Decision making, Emotional intellect and Digital literacy (in descending order of scores) as significant complex skills for Final Qualification Assessment digital transformation. Stakeholders of *Oriental Languages* programs prioritize Communication, Collaboration, Team Work and Flexibility to attain efficiency of Final Qualification Assessment digital transformation.

Communication and *collaboration* are the common complex skills across all types of Foreign Languages programs that rank as a type of skills most widely applied for the use of such ICT tools as email, Google services, video conferencing services and social Media platforms. Communication as a skill is ranked highest among respondents of the European languages program.

Team work is scored second most prominent complex skill employed via the use of Google Disk, learning management systems and video conferencing services. Team work and flexibility feature as top 5 priority skills among respondents of the Oriental languages program.

Learning and Innovation complex skills are attributed to the use of such ICT tools as a Learning Management Systems (ranking second after interdisciplinary skills), Automated Testing Systems (offline, online and cloud based), Android apps and Microsoft Office tools.

Creativity as a skill ranks 3rd in the use of Google services and ranks 1st in the use of Microsoft Office Tools.

2.2.3 Final Qualification Assessment Digital Tools Efficiency Ranking According to Complex Activities Performed

The method of Customer Satisfaction Evaluation Ranking (Dos Reis 2017; Morze et al 2016), was applied to the identified Final Qualification Assessment ICT tools to measure the efficiency of each ICT tool per each core activity in the structure of a complex educational scenario.

ICT tools have been divided into 4 groups according to types and relevance within the model of complex Final Qualification Assessment digital transformation: 1) Google cloud services (Google Suite); 2) Video conferencing services (Video-conferencing Services) 3) Learning management systems (Learning Management Systems and Tools); 4) Microsoft Office Tools (MS Office Suite).

The efficiency rating was customized in this study to assess the complex activities, carried out by implementation of assorted complex skills, scored separately for each type of ICT tool for Final Qualification Assessment (Communication (synchronous); Communication (asynchronous); Collaboration; Information/file sharing; Summative assessment; Formative assessment; Peer review; Presentation; Speech quality assessment; Brainstorming). Each activity importance was ranked according to the 5-Point Likert Scale (1 = least prominent for the use of a tool type, 5 = maximum prominent for the use of a tool type) for the selected ICT tools type.

The efficiency rating (ER) for each type of ICT tools was calculated via a 3 step algorithm:

$$RC = \sum(p)/(N(r) \times 5) \quad (1)$$

(1) Rating Coefficient calculation. *Legend*: RC - is a Rating Coefficient of an ICT tools type; $\sum$ (p) - is

the sum of points per each activity, carried out via an ICT tool type; N(r) - is the number of respondents, that have assessed the ICT tool type efficiency; 5 - is the number of points maximum per each activity rating.

$$SR = \sum(p) \times RC \quad (2)$$

(2) Summative rating (SR) of each activity per ICT tool calculation. *Legend*: SR - is the Summative Rating of each activity per ICT tool; ∑(p) - is the sum of points per activity, carried out via an ICT tool type; RC - is the Rating Coefficient of an ICT tool type.

$$ER= \sum(SR)/N(a) \quad (3)$$

(3) Total Efficiency Rating (ER) of a type of ICT tools assessed calculation. *Legend*: ER - is the Total Efficiency Rating of a type of ICT tools assessed; ∑(SR) - is the sum total of summative ratings per each activity, carried out via an ICT tool type; N(a) - is the number of activities evaluated for the ICT tool type.

Complex activities scoring the highest summative rating (SR), realized effectively per each type of ICT tools assessed, are as follows: Tool Type 1 (Google Suite) - Communication (synchronous) (SR=9,72), Information/file sharing (SR=9,72), Summative assessment (SR= 9,54), Presentation (SR=9,54); Tool Type 2 (Video-conferencing Services) - Communication (synchronous) (SR=9,54), Collaboration (SR=9,54), Speech quality assessment (SR=9,54); Tool Type 3 (Learning Management Systems and Tools) - Communication (synchronous) / Communication (asynchronous) (SR=8,84), Brainstorming / Formative assessment (SR=8,67); Tool Type 4 (MS Office Suite) - Communication (synchronous)/ Collaboration (SR=72). The Summative ranking score of 9,54 for every other activity realized by the ICT tool type.

Video conferencing services (*Google Meet, Zoom, Webex, MS Teams, Adobe Connect*) score the highest efficiency ranking for synchronous communication (62.5% for top score 5), but get a surprising ratio of lowest score as well (18,9% for lowest score 1). Learning management systems (29,8% for top score 1) and Google services (25%) get a proportional highest score 5 for efficiency in Synchronous communication in the framework of Final Qualification assessment across European and oriental languages programs.

The sample ranking testifies to the following conclusions: 1) the use of ICT for complex transference of Final Qualification assessment into digital mode for foreign languages programs is specific to this type of complex educational scenario and may not be encountered outside of this activity framework; 2) digital literacy as a complex skillset, featured by participants of Final Qualification assessment for foreign languages programs is customized to accommodate the range of professional competencies and communicative activities specific to linguistic education.

3 CONCLUSIONS

Procedures and scenarios of the Final Qualification Assessment for foreign languages at Borys Grinchenko Kyiv University comprise a complex comprehensive framework, facilitating its transference to digital format with the use of various of ICT tools through the COVID-19 pandemic adjustments. The elaborated model of Final Qualification Assessment complex transformation into digital format can be applied to programs outside of Liberal Arts (STEM, Engineering, Computer Science etc.), with the appropriate adjustments of communicative activities used to activate corresponding professional competences of the stakeholders.

The need to fulfil framework activities in digital format incited the heretofore underutilized complex skills in various combinations (communication, collaboration, team-work) within the scenario of digital Final Qualification Assessment. These results corroborate the correspondence between communicative competence and complex ICT competence components, adapted for Liberal Arts. The components of ICT competence, crucial to fulfil the complex communicative and collaborative activities of Final Qualification Assessment in digital format are: participation in group ICT initiatives, creating e-learning tasks, systemic use of ICT, presentation to the community the results of one's research, assisted by ICT.

The following *recommendations* can be devised to accommodate the needs of complex educational scenarios adaptation into digital format for Foreign Languages university programs: 1) digital literacy improvement for all participants, customized for all elements of complex educational procedures separately; 2) systematization of "soft" (communicative, psychological, cultural) challenges, corresponding to complex educational frameworks overall and to individual educational scenarios, to enhance application of relevant complex skills (collaboration and networking via digital media in the lockdown framework; Critical thinking and decision making; Learning and innovation (professional activity outside of the comfort zone).

The study *limitations* are derivative of the narrow window of benchmarking period for one case study of Final Qualification Assessment session in the COVID-19 timeframe. The survey methodology can be further refined to accommodate assessment of complex skills adaptability for separate groups of educational process participants (students of foreign languages programs, Assessment board members, staff members, reviewers) according to roles and tasks performed in the complex framework, as well as according to age and entry digital literacy level (the distinction in efficiency assessment among digital natives and digital immigrants). The perspective of the study is in comparative diagnostics of digital qualification assessment complex experiences of students and faculty members of Asian (Oriental) countries and countries of Europe.

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