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Japanese Experience of Communication Training in Ukrainian Higher Medical Education during the COVID-19 Quarantine Period

Japońskie doświadczenie w szkoleniu komunikacyjnym w ukraińskim wyższym szkolnictwie medycznym w okresie kwarantanny COVID-19

ABSTRACT

The article aims at implementing Japanese experience of communication training by means of digital storytelling (DST) at Danylo Halytsky Lviv National Medical University under conditions of COVID-19 quarantine and distance learning. The paper studies and discusses the effectiveness of DST-based training and evaluation technique in the development of communication skills. The research involved 76 first- (N = 38) and second-year medical students (N = 38). The evaluation of DST skills was performed by ten criteria (8 structural, 2 stylistic) and occurred in three stages: introductory, developmental and final. Obtained data were statistically processed and analyzed. The research results were analyzed by (I) differences between groups, and (II) differences between stages. They indicate significant improvement of DST skills in both experimental groups at three research stages (p < 0.01). Rapid developmental dynamics of DST skills is primarily associated with better improvement of DST skills by structural criteria compared to stylistic in all participants (p < 0.01). This phenomenon indicates the requirement for further analysis and paying more attention to the development of lexical and grammar skills of medical students. Thus, the study confirmed the effectiveness of DST method in communication training and feasibility of its implementation in higher medical education as a tool of communication skills development.

Keywords: communication training; digital storytelling; medical students; Japan; Ukraine

INTRODUCTION

For the past three years, the system of higher education has been drastically transformed due to COVID-19 quarantine restrictions. The pandemic affected all branches of higher education, including medical. Information and communication technologies (ICT), which have been earlier applied in higher medical education with some caution and suspicion, are being continuously implemented with the aim of providing qualitative professional training of medical students. The most common ICTs used for professional clinical and communication purposes at medical schools include virtual patients, electronic social media, and online learning resources, namely e-books, e-platforms, etc. The social media technologies like blogging (writing content online) and vlogging (producing videos and posting them online) are becoming more and more common as teaching and learning practice at higher medical education institutions. These forms of media activities promote the development of communication skills and aid reinforcing professional knowledge. Both blogging and vlogging involve written and oral communication, including writing and telling different stories online effectively. The combination of the listed skills is referred to as digital storytelling (DST) which is defined as the art of sharing various stories by means of ICTs.

The use of DST for communication training in Japan is characterized by significant progressive tendency. Evidence-based Japanese research confirms the effectiveness of DST as a learning technology. The prominent experience of this country, as well as analysis of acting Japanese DST-based projects, aimed at developing communication skills of students, provided the background for our study. Based on the outstanding ideas concerning communication training, we developed a DST-based training and evaluation technique and implemented it in communication course of medical students at Danylo Halytsky Lviv National Medical University (LNMU) in the time of COVID-19 quarantine.

The research aims at promoting DST in communication training of medical students and confirming the effectiveness of DST-based training and evaluation technique in the development of communication skills under conditions of COVID-19 quarantine and distance learning.

LITERATURE REVIEW

DST is a common communication training practice in Japanese higher education (Mizukoshi, 2019; 2020). This relatively new learning technology is researched by a number of Japanese scientists. Shin Mizukoshi (2019; 2020) studied the historical background of DST and its influence on the development of oral communication skills. Implementation of DST as an effective tool of communication training, its promotion among educators and Japanese society are described

in papers of Akiko Ogawa and Yuko Tsuchiya (2016), Hitoshi Susono, Tomoka Ikawa and Ai Kagami (2011). The development of oral communication and fluency in an English reading class by means of DST at a Japanese medical university was investigated by Midori Kimura (2012).

Ukrainian scientists also emphasize the necessity of implementing differentiated approaches to professional training (Nychkalo, Liukanova, Bidyuk, Tretko, Skyba, 2020) and designing DST-based methodology aimed at communication skills development and evaluation (Sodomora, Gutor, Tryndiuk, Lobanova, 2021). Numerous researchers worldwide discuss the effectiveness of DST as a signature pedagogy for the new humanities (Benmayor, 2008), and a tool of multimodal literacy (Gregori-Signes, 2014).

Possible educational applications of DST are researched by Donna D'Alessandro, Tamra Lewis and Michael D'Alessandro (2004). The papers of Pip Hardy and Tony Sumner (2014) discuss the potential of DST in cultivating compassion of healthcare workers. American researchers Susan Lacey and Debra Craighead (2021) proved the ability of DST to reduce unplanned healthcare encounters. Kathrine Moreau, Kylee Eady, Lindsey Sikora and Tanya Horsley (2018) developed a systematic review of storytelling in health professions education. The ability of DST to act as virtual patients is studied by Stanley Rabinowitz, Benjamin Maoz, Michael Weingarten and Riva Kasan (1994), whereas the role of DST as a teaching and learning tool is investigated by Bernard Robin (2012; 2016).

National and international interest in DST as actual and potential educational technology, as well as its insufficient development in Ukraine indicate the requirement for the profound research of DST aimed at its implementation into the teaching and learning practice.

RESEARCH METHODS

Our study involved 76 participants – first- and second-year medical students of LNMU. It primarily aimed at researching the efficacy of a developed DST-based technique, directed at promoting the development and enabling evaluation of oral communication skills in English (Sodomora et al., 2021). The study participants were divided into 2 research groups, namely: 1) first-year medical students (N = 38) and 2) second-year medical students (N = 38), studying at LNMU – specialty General Medicine. The students were 16 to 20 years old, however, the influence of age and gender on the development of communication skills features was not analyzed in this study.

The research was performed in three stages: 1) introductory – aimed at primary evaluation of the entry level of DST skills; 2) developmental – following the instruction on basic DST peculiarities; and 3) evaluation – following personalized analysis of students' stories at stages 1 and 2. All students filmed their stories and

sent them via Telegram, which they preferred as the most convenient social media service. Each of the students filmed 3 short video stories related to the English class topics according to the thematic schedule.

Our DST-based technique is directed at both oral communication skills development and evaluation of the structure and the style of a story. To obtain better results concerning the development of mentioned skills and their evaluation, we outlined ten story features, including eight structural and two stylistic ones which served as evaluation criteria at each of the three stages.

The structural criteria included: 1) story setting, specifying the location and time of the event; 2) description of characters; 3) morality; 4) gradual and logical plot; 5) conflict; 6) climax; 7) resolution; and 8) impressive tone and emotion. While, the stylistic criteria concerned 9) the proper and correct choice of vocabulary and 10) grammar.

The DST-based technique enabled evaluation of the storytelling skills in points by the designed scale. A maximum total number of points (general mark) a student could obtain was 100 points, while the minimum was 0 points. The general mark resulted from the calculation of the mean value of received points for 10 story features. Each of the story features was evaluated as a maximum of 100 and a minimum of 0 points. The evaluation criteria of every story feature were thoroughly specified, which allowed comprehensive and objective evaluation of DST skills.

The research results were analyzed by (I) differences between groups, and (II) differences between stages. The obtained data were demonstrated as general (all participants) and group (two research groups) results. As regards the tools, we applied the Microsoft Excel, RStudio and R Commander for the statistical procession of received data. Based on the Shapiro–Wilk test, the data were presented as a mean value ±SD in case of normal distribution (points for story features: 1, 2, 4, 6–10). If the distribution was different from normal, the data were presented as a median value (points for story features: 3 and 5) (percentile 25; percentile 75). The significant differences have been calculated by the ANOVA method and confirmed by the *post-hoc* analysis. We applied paired comparison of first vs second, second vs third, and first vs third stages. The obtained results were considered statistically significant when p value was <0.05.

RESULTS

The research results demonstrate a dynamic increase of a general level of DST skills in all medical students during three experimental stages (p < 0.01) (Figure 1).
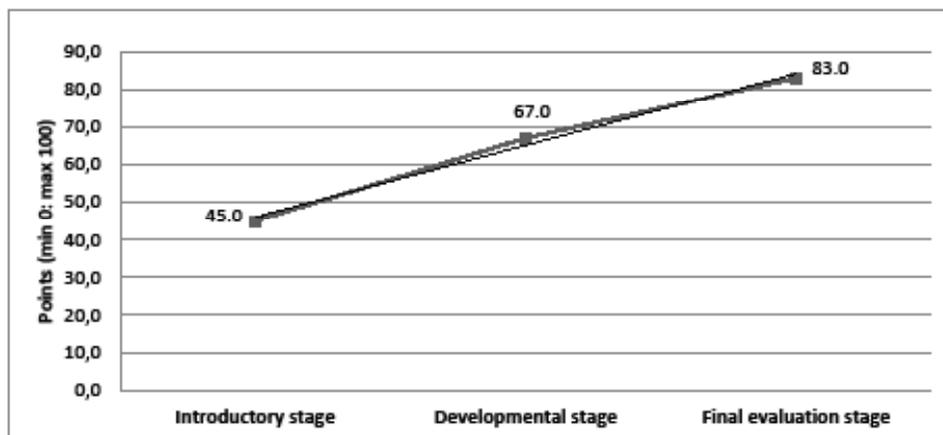
Figure 1. Development of a general level of DST skills in all medical students during three experimental stages

Source: Authors' own study.

The group analysis of students' success in the development of DST skills based on their general marks also revealed an increasing tendency and significant differences between three research stages ($p < 0.01$) (Figure 2). At the final evaluation stage, general students' results almost doubled compared to the first introductory stage in both groups of first-year and second-year students. The final result in the group of first-year students grew by 40.8 points and accounted for 83.2 points. Final results were by 0.5 points lower in the second group than in the first one ($p > 0.01$), and their general progress of DST skills was lower and accounted for 35.0 points. However, the students of the second group demonstrated better results at the first introductory evaluation stage, namely: 47.7 compared to 42.7 in the first group ($p > 0.01$). In general, DST skills improved gradually in both groups. At every further research stage, the points increased from 42.4 (introductory stage) to 65.9 (developmental stage) to 83.2 (evaluation stage) in the group of first-year students ($p < 0.01$), and from 47.7 (introductory stage) to 68.1 (developmental stage) to 82.7 (evaluation stage) in the group of second-year students ($p < 0.01$), respectively.

Figure 3 demonstrates general progress of DST skills in all participants divided by their ability to structure the story properly and stylistic appropriateness of the story. In general, both structural and stylistic DST skills improved, however, the progress concerning the development of story-structuring skills was more substantial compared with stylistic skills. By generalized analysis of structural criteria at three research stages, the level of DST skills increased by 42.6 points: from 41.9 to 66.4 and to 84.5 points ($p < 0.01$). The study of general students' success at three research stages by stylistic criteria demonstrated the following tendency:
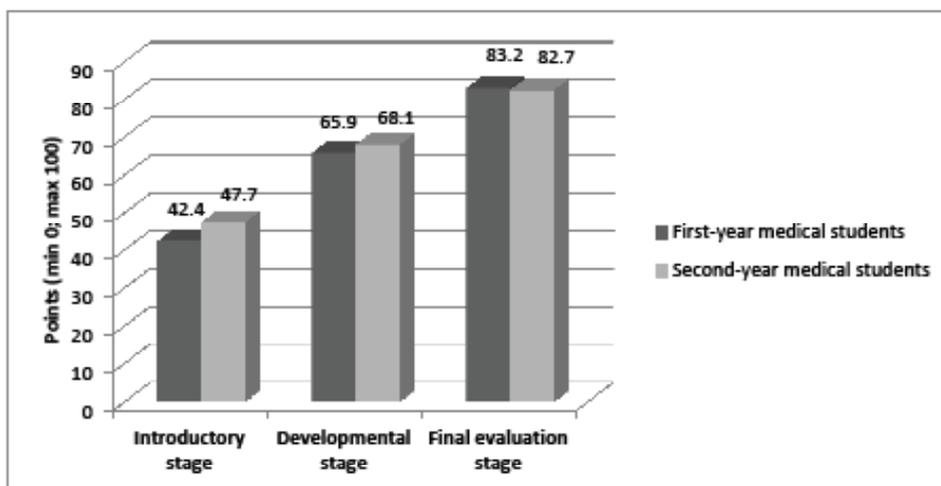
Figure 2. Development of a general level of DST skills in two groups of medical students during three experimental stages

Source: Authors' own study.
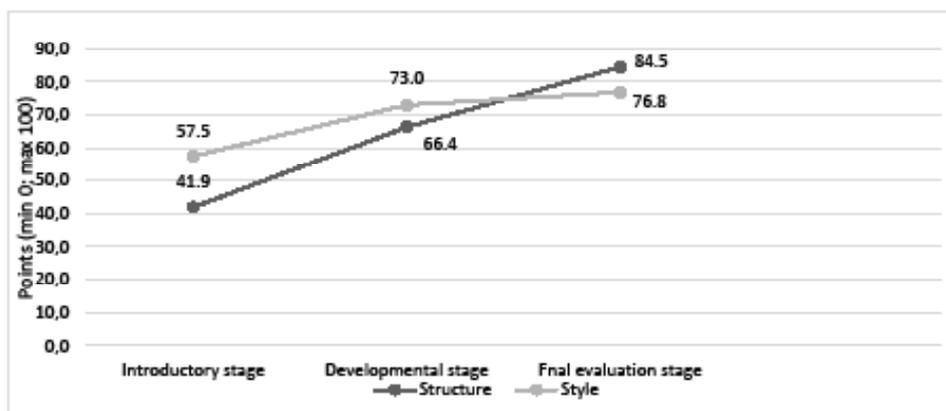

Figure 3. Development of structural and stylistic DST skills during three research stages

Source: Authors' own study.

from 57.5 to 73.0 ($p < 0.01$) to 76.8 points ($p > 0.01$). The progress in the second vs third stage was statistically insignificant.

General stylistic skills improved by 19.3 points, which is significantly lower compared to structural skills, which improved by 42.6 points at the introductory vs final evaluation stages ($p < 0.01$) (Figure 4).
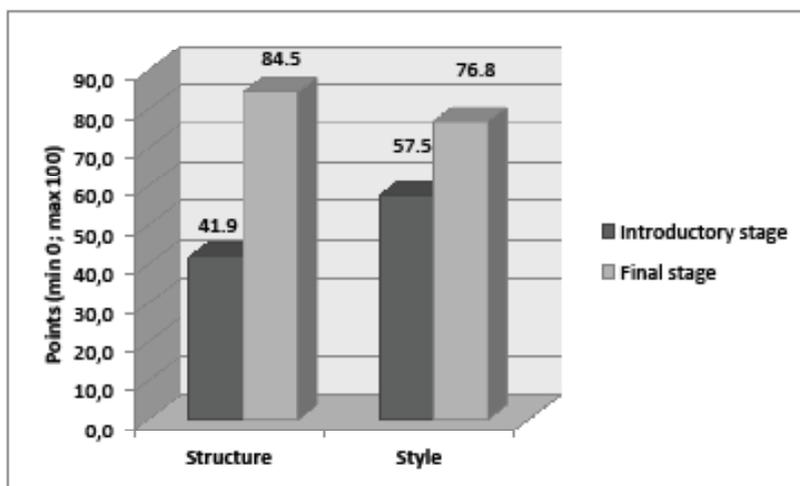
Figure 4. General results by the DST-based developmental and evaluation criteria combined according to structural and stylistic features

Source: Authors' own study.

General points for the development of structural skills, according to eight evaluation criteria, are demonstrated in Table 1. The data indicate that climax-reaching was the most problematic DST skill at the introductory evaluation stage $(p > 0.01)$ and accounted for 36.6 points. It remained the lowest at the final evaluation stage as well (76.0) $(p > 0.01)$. The highest points at this research stage were obtained for the impressive and emotional tone – 45.4 $(p < 0.01)$.

The developmental research stage is characterized by the most significant results of skills concerning story conflict expression 100.0 (100.0; 100.0) and clear conflict resolution (68.4 points) (Table 1). The lowest mark (60.8) is related to story setting $(p > 0.01)$. At the final evaluation stage, best results were received for expressing morality 100.0 (100.0; 100.0) and developing a gradual and logical plot (89.9) $(p > 0.01)$.

Group results indicate better results of the second research group at first two stages (Figure 2, Table 2). The group analysis by all DST-based developmental and evaluation criteria at the introductory evaluation stage demonstrated better results in the second group than in the first one $(p > 0.01)$. Developmental stage is also characterized by the dominance of the second group $(p > 0.01)$. The only mark for the choice of proper vocabulary was lower in the second group than in the first one: 69.7 vs 70.3 $(p > 0.01)$, respectively.

The general analysis of the final evaluation stage results showed worse general results of the second research group compared to the first one (83.2 vs 82.7). However, detailed group study by DST-based developmental and evaluation criteria revealed that the second group dominated in case of seven out of ten criteria

(p > 0.01). The first group of students showed better results by the criteria of impressive and emotional tone (80.3 vs 77.0), vocabulary (81.1 vs 74.2) and grammar (77.9 vs 74.2) uses (p > 0.01).

Table 1. General research results by DST-based developmental and evaluation criteria at three stages

DST-based developmental and evaluation criteria	Introductory stage Mean ± SD / median value (percentile 25; percentile 75)	Developmental stage Mean ± SD / median value (percentile 25; percentile 75)	Final evaluation stage Mean ± SD / median value (percentile 25; percentile 75)
Structural criteria			
Story setting	40.0±15.7	60.8±17.4	79.5±15.3
Description of characters	44.2±14.4	63.7±18.1	82.4±15.3
Morality	0.0 (0.0; 0.0)	100.0 (0.0; 100.0)	100.0 (100.0;100.0)
Gradual and logical plot	41.8±19.1	66.8±20.0	89.9±13.7
Conflict	100.0 (0.0; 100.0)	100.0 (100.0; 100.0)	100.0 (100.0; 100.0)
Climax	36.0±17.9	61.3±19.1	76.0±20.2
Resolution	42.4±17.9	68.4±20.5	81.8±15.0
Impressive and emotional tone	45.4±17.4	67.8±17.1	78.6±17.1
Stylistic criteria			
Vocabulary	57.4±15.4	70.0±13.9	77.6±14.1
Grammar	57.6±16.9	68.8±15.6	76.1±16.1

Source: Authors' own study.

Table 2. Group research results by DST-based developmental and evaluation criteria at three stages

DST-based developmental and evaluation criteria	Introductory stage Mean ± SD / median value (percentile 25; percentile 75)		Developmental stage Mean ± SD / median value (percentile 25; percentile 75)		Final evaluation stage Mean ± SD / median value (percentile 25; percentile 75)	
	1st group	2nd group	1st group	2nd group	1st group	2nd group
Structural criteria						
Story setting	32.6±10.8	47.4±16.4	55.8±14.8	65.8±18.5	78.4±15.7	80.5±15.1
Description of characters	37.9±6.2	50.5±17.2	55.3±13.5	72.1±18.3	82.1±14.5	82.6±16.2
Morality	0.0 (0.0; 0.0)	0.0 (0.0; 100.0)	100.0 (0.0; 100.0)	100.0 (0.0;100.0)	100.0 (100.0; 100.0)	100.0 (100.0; 100.0)

Gradual and logical plot	32.6±15.0	51.1±18.4	59.5±18.3	74.2±19.1	80.5±11.8	85.3±15.2
Conflict	100.0 (100.0; 100.0)	0.0 (0.0; 100.0)	100.0 (100.0; 100.0)	100.0 (0.0;100.0)	100.0 (100.0; 100.0)	100.0 (100.0; 100.0)
Climax	32.6±9.4	39.5±23.2	60.2±12.6	62.5±24.0	73.4±18.0	78.6±22.1
Resolution	32.6±12.7	52.1±17.1	62.6±19.3	74.2±20.2	78.4±15.7	85.3±13.7
Impressive and emotional tone	39.5±9.0	51.3±21.5	67.1±14.7	68.4±19.4	80.3±14.7	77.0±19.2
Stylistic criteria						
Vocabulary	56.1±13.9	58.7±17.0	70.3±11.7	69.7±15.9	81.1±11.3	74.2±15.9
Grammar	52.4±14.8	62.9±17.4	67.4±12.2	70.3±18.4	77.9±13.2	74.2±18.5

Source: Authors' own study.

The general analysis of results by the criteria of vocabulary and grammar, described in Figure 5, indicated almost equal introductory level of vocabulary and grammar skills: 57.4 and 57.6, respectively ($p > 0.01$). At the final evaluation stage, results of students by these evaluation criteria increased significantly ($p < 0.01$) and accounted for 77.6 points for vocabulary and 76.1 points for grammar.
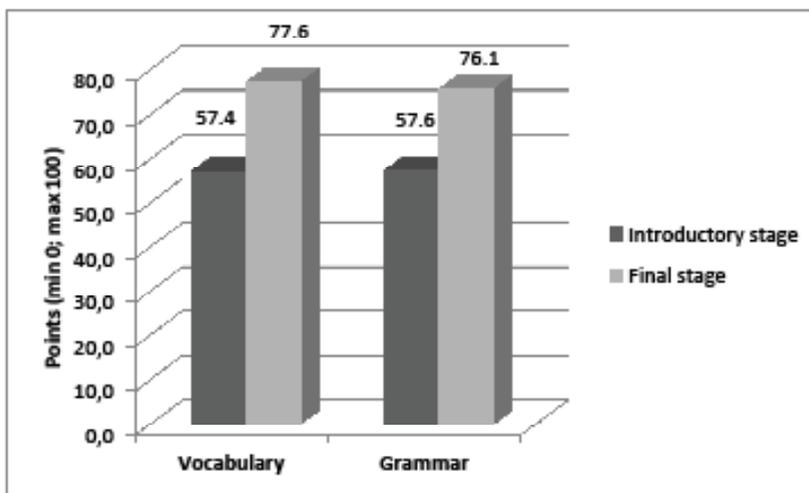

Figure 5. General results by DST-based developmental and evaluation stylistic criteria of vocabulary and grammar
Source: Authors' own study.

The group analysis of results by DST-based developmental and evaluation stylistic criteria of vocabulary and grammar at the introductory vs final evaluation

stages showed that the level of vocabulary skills improved by 25.0 in the group
(p < 0.01) of first-year students and by 15.5 in the group of second-year students
(p < 0.01). While the grammar skills improved by 25.5 in the group of first-year
students (p < 0.01), and by 11.3 in the group of second-year students (p < 0.01),
respectively. The group results by grammar and vocabulary criteria are equal (74.2
and 74.2 points) in the group of second-year students. Participants of this group
have higher introductory marks for both vocabulary and grammar skills compared
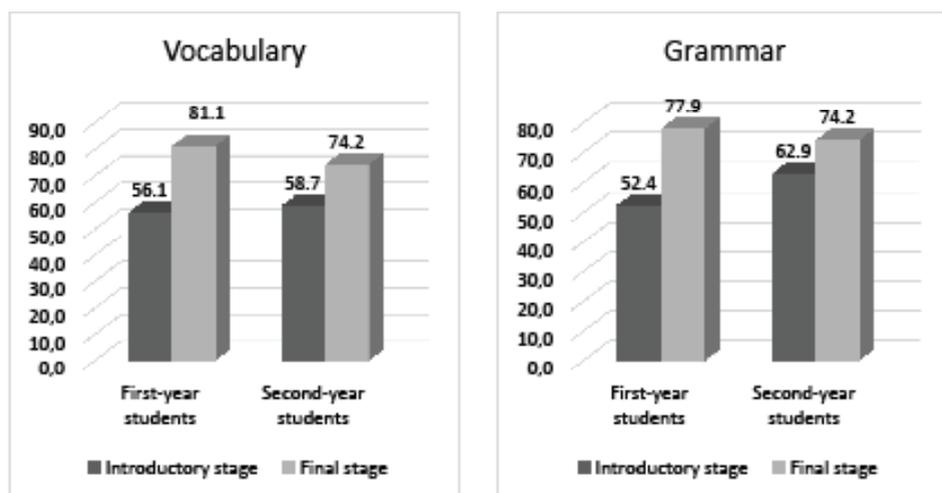to the first group: 58.7 vs 56.1 points (p > 0.01) and 62.9 vs 52.4 points (p < 0.01)
(Figure 6).

Figure 6. Group results by DST-based developmental and evaluation stylistic criteria of vocabulary
and grammar

Source: Authors' own study.

DISCUSSION

Japanese research papers report significant attention to the development of
communication skills, which is primarily associated with supporting free expres-
sion and media literacy in different categories of population (Mizukoshi, 2019;
2020). This process results in promotion and intensive implementation of commu-
nication training in higher education throughout the country (Ogawa, Tsuchiya,
2016; Susono et al., 2011; Kimura, 2012). Valuable experience of Japan proves
the ability of effective communication skills development by implementation of
social and educational projects based on DST (Mizukoshi, 2019; 2020). In Jap-
anese higher education institutions, the DST-based communication training ap-
proach is primarily used to encourage the development of oral communication
fluency in students of different specialties. Moreover, the technique of DST is

used as an instrument of educational and psychological influence on learners and society in general.

DST is believed to be a must-have professional skill in the 21st century as it has a lot of useful practical implementations. Economically, DST serves as a modern instrument of digital marketing and earning from vlogging. In healthcare, DST-based vlogs and blogs are used as effective learning and teaching tools as well as instruments of telemedicine aimed at sharing specialized and professional medical information and advice, thus, promoting health in population (Lacey, Craighead, 2021; Moreau et al., 2018).

Japanese achievements encouraged us to create a DST-based technique, directed at developing and evaluating communication skills of students. It has already been implemented into academic practice of Ukraine. Our previous study (Sodomora et al., 2021) discussed the effectiveness of the designed technique and confirmed its validity in the academic process. However, we indicated the requirement for further research of its qualitative implementation in communication training of Ukrainian medical students, as medical students demonstrated the highest performance in developing DST-based communication skills compared to students of other specialties (Sodomora et al., 2021).

The previous research gap is fulfilled in this study. The dynamic increase of DST skills of medical students throughout all experimental stages (Figure 1) indicates their significant learning potential as well as validity of a designed technique in the development of DST-based oral communication. Improved academic and potential professional quality may result from increased entry requirements in higher medical education, i.e. ≤150 points for Independent External Testing (out of a minimum of 100 and a maximum of 200).

Most required professional qualities of medical students include clinical and communication skills the combination of which forms a basis for future successful career. Both highly-professional and competitive academic communication are impossible without fluency in English which *de facto* acts as the main language in professional and academic spheres of international level. Interdisciplinary approach in communication training of medical students at the LNMU results in the improvement of both basic and professional medical knowledge as well as linguistic communication skills which is confirmed by the results of our study. The group of second-year students showed significantly better results compared to the group of first-year students at the introductory research stage (p < 0.01), which indicates the improvement of tested skills with university study time.

In addition to creating professionally demanded skill of DST, in the time of COVID-19 quarantine, a researched DST-based technique served as a perfect developmental and evaluation instrument of English oral communication skills. Medical students demonstrated excitement, which was growing at each new experimental stage (p < 0.01), while preparing, telling, filming, and discussing their

stories. They mastered their DST skills, monitored their individual and group progress which was reflected by marks and expressed satisfaction. Several students even reported association of their qualitatively improved personal vlogging activity with received knowledge and skills of DST. The following appears possible taking into account the results of our research which demonstrate almost doubling of the level of DST skills in all students, namely 45.0 points at the introductory stage and 83.0 at the final evaluation stage ($p < 0.05$).

DST competency requires the presence of the following influencing components: technical equipment and skills, the knowledge on peculiarities of story structuring, abilities to perform and emotionally present a story, and linguistic skills. The spread of smartphones and tablets among medical students provide the necessity and feasibility of their application with academic purposes, especially for distance learning in time of quarantine. This enabled the presence of the first component. All of the participants ($N = 76$) had the technical possibility to complete the DST-based task.

The research results show that it was easier to progress in digital story structuring skills than in stylistic skills (Figure 2). The level of students' story structuring skills was lower at the introductory stage but higher at the final stage compared to stylistic lexical and grammar skills ($p < 0.05$), which were higher at the beginning and lower at the end of the experiment. However, both types of DST improved at introductory vs final evaluation stages ($p < 0.05$), which indicates the effectiveness of the developed DST-based technique.

Another interesting research result is associated with higher performance of the second-year students concerning stylistic vocabulary and grammar skills at the introductory stage compared with the first group, who, by the same criteria, performed better than second group at the final evaluation stage ($p > 0.05$). While the difference is insignificant, it can indicate that the lexical and grammar skills of medical students are not developed sufficiently during the years of study. The following can be explained by terminological orientation of communication training at the LNMU, which influences the level of general language skills acquired formerly. However, the issue requires more profound investigation.

Stylistic skills in all students did not improve significantly at the developmental vs final evaluation stages ($p > 0.05$), which is obvious due to impossibility of rapid progressing in lexical and grammatical knowledge. Development of these skills requires a gradual approach during the whole period of university study.

The subdivision of story structuring skills into eight evaluation criteria enabled highlighting the most and the least problematic learning areas at different research stages. Students' stories become better with each experimental stage and, finally, they presented fascinating emotionally-rich high-morality stories (Table 2). The skills analysis by all structural criteria demonstrated the most significant improvement of emotional component as well as the ability of developing a gradual and logical plot.

The scientific attempt of DST skills development and obtained knowledge on DST peculiarities, resulting from this attempt, can positively reflect on future healthcare career of medical students and promote their personal and professional oral communication online. However, the performed research has several limitations concerning the methodology of designed DST-based technique. It was primarily designed to develop and consequently evaluate students' knowledge during real time online English classes. Thus, it does not evaluate the design and technological peculiarities of digital stories filmed by students. This feature requires separate attention as it significantly influences the story effect and impression. The designed DST-based technique should be improved in order to motivate students and provide more reliable evaluation.

CONCLUSIONS

The performed study aided promoting DST in communication training of LNMU medical students. The research results prove the effectiveness of DST method in developing and proper evaluating communication skills under conditions of COVID-19 quarantine and distance learning. The significant differences have been found between the results of all research stages ($p < 0.01$). Division of the DST-based training and evaluation technique by ten criteria (eight structural and two stylistic) enabled the convenient and accurate evaluation of students' digital stories at three experimental stages, highlighting problematic aspects and their further improvement. Thus, the technique is confirmed as a perfect teaching and learning tool in communication training, particularly, development of speaking fluency among medical students.

The prospects for our further research include: improvement of the DST-based training and evaluation technique by adding additional component criteria of design and technological effects and control of its effectiveness, as well as approbation of the technique and comparison of the results in medical students of different specialties, i.e. general medicine, pediatrics, pharmacy, and dentistry.

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ABSTRAKT

Celem przeprowadzonych badań było wdrożenie japońskich doświadczeń w szkoleniu komunikacyjnym za pomocą cyfrowych opowieści (*digital storytelling*, DST) we Lwowskim Narodowym Uniwersytecie Medycznym im. Danyła Halickiego w warunkach kwarantanny COVID-19 i uczenia się na odległość. W artykule omówiono skuteczność treningu i techniki ewaluacji opartej na DST w rozwoju umiejętności komunikacyjnych. W badaniu wzięło udział 76 studentów pierwszego

(N = 38) i drugiego roku medycyny (N = 38). Ocena umiejętności DST dokonywana była według 10 kryteriów (8 strukturalnych, 2 stylistycznych) i przebiegała w trzech etapach: wstępnym, rozwojowym i końcowym. Uzyskane dane zostały przetworzone i przeanalizowane statystycznie. Wyniki badań analizowano za pomocą (I) różnic między grupami i (II) różnic między etapami. Wskazują one na istotną poprawę umiejętności DST w obu grupach eksperymentalnych na trzech etapach badawczych (p < 0,01). Szybka dynamika rozwoju umiejętności DST wiąże się przede wszystkim z lepszą poprawą umiejętności DST według kryteriów strukturalnych w porównaniu z kryteriami stylistycznymi u wszystkich uczestników (p < 0,01). Zjawisko to wskazuje na konieczność dalszej analizy i zwrócenia większej uwagi na rozwój umiejętności leksykalnych i gramatycznych studentów medycyny. Badani potwierdzili skuteczność metody DST w treningu komunikacyjnym i możliwość jej zastosowania w wyższej edukacji medycznej jako narzędzia rozwoju umiejętności komunikacyjnych.

Słowa kluczowe: szkolenie z komunikacji; cyfrowe opowieści; studenci medycyny; Japonia; Ukraina