

Implementation of Signature Pedagogy in Music Teacher Education by the means of Small Private Online Course

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ABSTRACT

The paper demonstrates the advantages of the professional pedagogy improvement by the means of the signature pedagogy developed by Shulman. The research work was based on the systematic review of 120 papers. Through this work were established that most authors designed a new set of methods for the implementation of the signature pedagogy in the educational practice in order to reflect the unique character of any professional activity and the meaning of human capacity in personal professional development. In the study were characterized three dimensions of the signature pedagogy in musical education including surface, deep and implicit structure. These dimensions were implemented by the means of SPOC (Small Private Online Course), which structure included lectures, internet resources, collection of students' works for exchanging of experience and collaborate work in the research area. The study involved 306 from first to fourth grades students of music teacher bachelor's degree program from two universities: Kazan Federal University (Kazan) (156 students) and I.Yakovlev Chuvash State Pedagogical University (Cheboksary) (150 students). The experimental data were collected from tests results and analysis of questionnaires by quantitative and statistical methods. The results of the level of musical knowledge and value orientations were increased in the student's group who learned by online course based on signature pedagogy, but not in the traditional group. Based on the experimental research work were concluded that online learning course based on SPOC is a perspective way for developing education system.

CCS CONCEPTS

• **Applied computing** → Education; Interactive learning environments; Arts and humanities; Performing arts; • **Human-centered computing** → Interaction design; Interaction design process and methods; Activity centered design; • **Computing methodologies** → Machine learning; Learning settings; Active learning settings.

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KEYWORDS

Online Course, Small Private Online Course, SPOC, Signature Pedagogy, Music Education, Music Teacher Education

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1 INTRODUCTION

The modern world characterized by radical changes in the external environment as well as the young generation's consciousness and the way of perceiving the world. People who grow up in close contact with gadgets we call today generation "Z" and state that their ability to learn information needs in new teaching methods and approaches. These students are ready to improve themselves using critical thinking in analysis information variety rather than follow direct instructions from the only source. In order to satisfy young people's educational needs, university teachers need to explore effective methods which will allow them to capture students' attention and manage them in the way of mastering the profession.

In contrast, the traditional educational system features by teachers' strict exposure the leading trend in pedagogy today is allowing students to take a more active role in getting knowledge in accordance with personal needs. Among new methods and approaches in pedagogical science, the valuable position takes signature pedagogy coined by Shulman for characterizing the teaching style based on the fundamental dimensions of any profession such as thinking, performance, and acting with integrity [1]. Shulman's key idea based on the statement that professional knowledge is more than academic discipline and needed in special methods in order to teach how to think like a real professional including values and hopes of the profession.

Due to the case of emergency when all the education process was shifted into the online way because of COVID19 pandemic [2] the relevance of designing online courses [3] which will satisfy actual educational purposes extremely increased [4].

Modern researchers based on the features of MOOC (Massive Open Online Course) [5] characterized differences between types of online courses [6, 7]. Among a wide range of online courses,

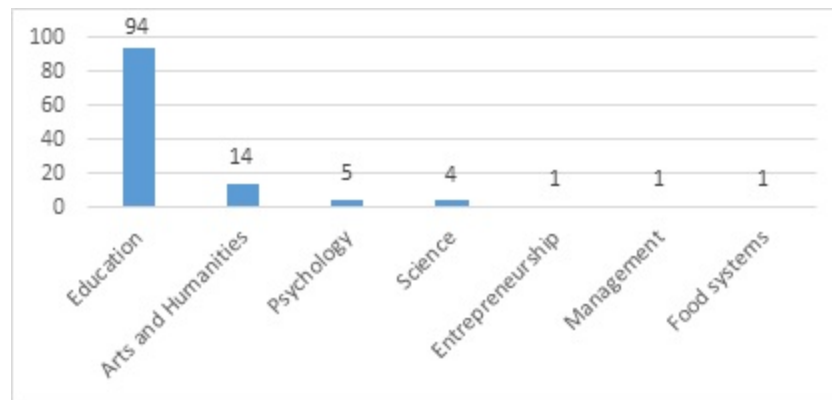


Figure 1: Number of articles in subject fields: Signature pedagogy or Signature pedagogies (n = 120) in the period (2006-2020)

they feature SPOC (Small Private Online Course), BOOC (Big Open Online Course), DOCC (Distributed Open Collaborative Course), LOOC (Little Open Online Course), MOOR (Massive Open Online Research). In order to characterize the SPOC researchers distinguished several varieties include COOC (corporative open on-line courses), courses designed for companies; SOOC (small open online courses), low-audience courses due to the extreme specialization of the subject and NOOC (nano open online courses), characterized by requiring less than 20 h of dedication [8]. These courses featured as a non-open for a small number of participants for satisfy their specific requirements [9, 10].

The choice possibilities of an appropriate one for students' active learning in art was a problem not learned enough in the past [11]. At the same time, modern Internet technologies allow creating educational environments according to learning needs include professional training [12].

The document is organized in six sections, which include the presentation of the current situation in the research field, the literature review, methods and data collection, analysis of the results, the discussion of the main challenges and solution of the problem, and conclusion that summarizes benefits of the small private online course based on signature pedagogy implementation.

2 LITERATURE REVIEW

2.1 Signature pedagogy within subject fields

The concept of signature pedagogy was invented by Shulman for the explanation methods variety for professional preparation in the fields of medicine, law, and clergy. Despite this fact, other researchers continued to use the approach more widely. A systematic literature review was carried out in order to learn more deeply the current state of the question. The relevant articles on the subject of interest in the last fifteen years were analyzed with the aim of discovering the fields where signature pedagogy was implemented and methods that were chosen by researchers. The methods of quantitative and qualitative analyses were used.

Once we have selected the research questions, the criteria for inclusion and exclusion of publications were taken. The scope was based on using the sampling strategy: all types of publications from 2006 through to the early of 2020; title "signature pedagogy"

and "signature pedagogies"; were excluded types of publications except "articles". After determining the criteria for inclusion, we selected the databases to be considered the most effective search to locate publications which will be capable of answering the research questions.

Based on the examine the signature pedagogy papers in the most known databases include Google Scholar, Scopus, ERIC, Web of Science were established that the most frequently used term signature pedagogy was in the Google Scholar (63,500). Following the analysis strategy any duplicates were uncovered and removed, thereby providing a final sample of n = 120 articles.

The analysis of these articles (Figure 1) demonstrated the use of the signature pedagogy approach in a wide range of subject fields. During the research work was established the most frequency articles with signature pedagogy in the title in the field of Education (78.3%). The signature pedagogy is common approach for Humanities within it offered in the field Art and Humanities (11.7%) as well as in the Psychology (4.2%). Despite the main trend of using the signature pedagogy in Humanities include Education, some researchers use this approach based on general principles for other fields include Science (3.3%), Entrepreneurship (0.8%), Management (0.8%), Food systems (0.8%). The standard deviation calculation of results of number of subject fields demonstrated a value $S=34.2$.

Among articles in the subject field of education there are three groups of papers based on signature pedagogies: science education, humanitarian education and training of educators. The selection of appropriate methods in the framework of signature pedagogies necessary in the process of preparation science specialists in the professional fields such as an engineer, a doctor or nurse, a physical or chemistry laboratory stuff. According to the results of our search in databases there are eight articles with signature pedagogy in the title in the field of science education, among them some articles in the area of engineering education (2.5%) and in the area of health and physical education (4.17%). In the field of Humanitarian education, the selection of signature pedagogy methods allows to establish new ways of correlation between educational process and reality of professional practice. Based on the results of the search in this research were found that the most frequency of signature pedagogy in Legal education (5.83%), also were found articles in

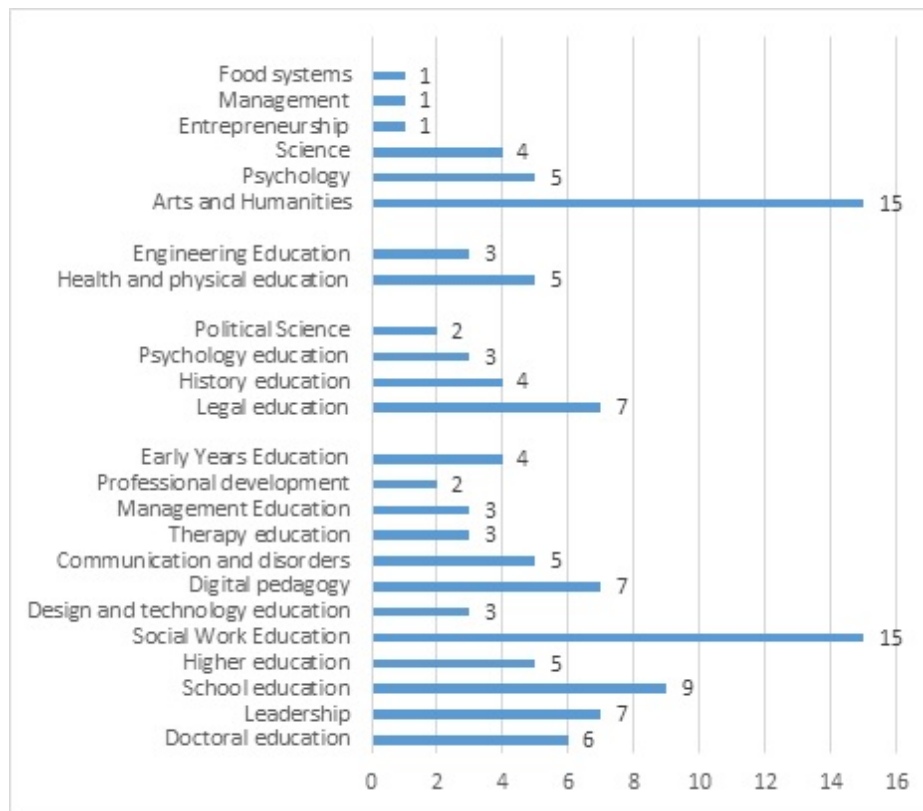


Figure 2: Detailed number of articles in subject fields: Signature pedagogy or Signature pedagogies (n = 120) in the period (2006-2020)

History education (3%), Psychology education (2.5%) and Political science (2%).

The highest percent of articles with signature pedagogy in the title is in the field of educators training that include all aspects of the educational system. Special methods in the frameworks of the signature pedagogy should be selected for each level of education: Early years education (3%), School education (7.5%), Higher education (4.17%), Doctoral education (5%). The most frequency area for studying through the signature pedagogy is the social work education (12.5%). For improvement the training system in the context of technology rapidly changes researchers pay attention for signature pedagogy in Digital pedagogy (5.83%) and Design and technology education (2.5%). The using of the signature pedagogy allows to improve the educational process for keeping mental and physical human health through the research in the area of Communication and disorders (4.17%) and Therapy education (2.5%). According to researchers the training of leader skills through the signature pedagogy could be fruitful in the area of Leadership (5.83%) and productive for staff training in the field of Management education (2.5%). The improvement of training professional skills process needs to be in close touch with real professional practice where the signature pedagogy as an approach allows to increase Professional

development (2%) more successfully. The standard deviation calculation of detailed results of number of subject fields demonstrated a value $S=3.71$ (Figure 2).

The biggest number of articles that covered the signature pedagogy was found in the field of education include all levels of the educational system such as initial and middle school, higher and post-higher education. Researchers demonstrate the implementation of the signature pedagogy for initial teacher education by using the method of activation of multidimensional thinking skills [13]. The improvement of school leadership through watching the specific movies in the middle school was based on the implementation of the signature pedagogy for the development the critical thinking skills [14]. In the post-higher educational level, the signature pedagogy was implemented by the means of research method [15]. In the research of coach education an active approach was chosen as a signature pedagogy for sports coaching [16].

A wide range of issues of the implementation of signature pedagogy were covered in the field of Humanities include such areas as psychology, history, journalism. For the improvement of students' writing skills researchers offer to use the method of critique [17]; the teaching history in the high school was based on the method of case study as a signature pedagogy [18]; in order to manage the educational process of future journalists researchers offer the integrated learning as a signature pedagogy [19].

The signature pedagogy approach was used widely in the field of art, include musical theory and performance through the comparison Western and Eastern musical tradition [20]; teaching theatre performing arts using the method of critique as a signature pedagogy [21]. The same method also was used in the graphic design classroom [22], and in the field of modern choreography for the improvement of dance technique [23]. The method of case study was chosen as a signature pedagogy for getting achievement of creativity in an orchestral composer workshop [24].

2.2 SPOC as a modern technology for the design of online course

The using online learning resources in higher education became additionally demanded through part decades to support the knowledge acquired from the formal face-to-face way [25]. The use of Massive Open Online Courses (MOOCs) is a critical way for the implementation of online education new model [26, 27] that allows realizing modern pedagogical approaches. The majority of research on distance learning was conducted in the use of Moodle (Modular Object-Oriented Dynamic Learning Environment) [28] and focused on the problem of quality in virtual education environments [29] where they have highlighted the main reasons of support the combination of e-learning and face-to-face teaching are: accessibility, flexibility, and interactivity [30]. Researches of online learning implementation perspectives open new possibilities for interaction among students from different countries including comparative aspects of opportunities [31]. Some researchers point to the meaning of open resources including open assessment as a means for deeper learning [32].

The term SPOC first coined by Fox [33] at the University of Berkeley which implies an adaptation of MOOCs to suit the specific needs of an educational body, diversification that “obeys educational criteria tending to personalize learning” [34]. In comparison with MOOCs which goal to spread the general knowledge for large groups, SPOC offer to implement educational projects for specific cohorts according to their needs. In first appearance SPOCs were featured as a way to succeed where MOOCs failed [35]. The specific format of SPOC allows for tutor to interact with all participants more intensive and relationship between them become more closer than in MOOCs. Sometimes SPOC have been developed in the university environment by applying the teaching resources used in MOOCs as a training course for the teaching staff [36] or as a supplement to degree courses [37], strengthening blended learning teaching so that students can adjust their learning pace to the contents and explanations of the lessons [38]. At the same time SPOC offers access to any information resources include web-sites or e-libraries, allows to delivery knowledge through lectures and presentations, test learning results and create the community by the means of forum and chat for sharing of study experience among participants.

Despite the implementation of online technologies today is widespread everywhere in music pedagogy they are not so common as in other fields until nowadays. The research works in online learning playing the instruments demonstrated the high results and learning advantages in using skype for student-teacher interaction [39]. The leading Universities offer a wide range of online courses

as MOOC on the platform of Coursera, EdX, and others for learning music as well as getting specific knowledge in history and theory of music, playing instruments or vocal singing, creating compositions or improvisations. Through all known and available in open Internet environment online courses we did not find the course for future music teachers as a SPOC for training specific professional skills [40].

3 METHODS AND DATA COLLECTION

The paper based on the signature pedagogy as methodological approach, coined by Shulman and divided into three levels: surface structure (educational process that includes all forms of classroom interaction between teacher and students); deep structure (the knowledge about effective methods in the subject area) and implicit structure (values and dispositions of professional experience). The signature pedagogy approach was implemented in the online course based on SPOC for future music teachers. The pivotal feature of this course is offering to each student individual subject area according to professional interests as a positive factor to keep attention and motivation for active learning.

The research work had taken place in online format at Kazan Federal University and I.Yakovlev Chuvash State Pedagogical University, where 306 students have taken part in the experiment where the online course based on signature pedagogy was implemented. All students studied on bachelor programs for future music teachers. In the experiment 150 students from I.Yakovlev Chuvash State Pedagogical University and 156 students from Kazan Federal University have taken part. The work with online course was organized in Kazan Federal University only. The data were collected by two methods: the test for assessing the students’ knowledge in the field of musical pedagogy and the attitude survey of value orientation created by Motkov and Ogneva [41]. To prove the results statistical methods of median and student’s t-test for knowledge test and the methods of median and standard deviation for attitude survey were used.

Ethical clearance to carry out the study was attained from KFU policy the processing of personal data. Students were informed about the purpose of the study and were given the option not to complete the questionnaire. Those who did agree to participate signed consent electronical form. The survey was anonymized to protect the identities of the students.

4 RESULTS

The results of the knowledge test were presented in the Table 1. For each correct answer for the question students received a mark equal to 0.5. All test included twenty questions. The total result of each student could be from zero to ten.

The analysis of the results demonstrated the maximum of diversity between the average results in two groups based on the results of medians and the obtained value of the student’s t-text in the zone of significance. These conclusions let us stated that students from Kazan Federal University demonstrated higher level of knowledge after learning the special online course then students form I.Yakovlev Chuvash State Pedagogical University.

The attitude survey included ten values that a responded must assess by five scales: in the aspect of the significance (one) and

Table 1: Knowledge test data in two groups

Students group's University	Number of students	The average result (median)	Student's t-test		
			$t_{kr}, p \leq 0.05$	$t_{kr}, p \leq 0.05$	t_{emp}
Kazan Federal University	156	9	1.95	2.58	0.8
I.Yakovlev Chuvash State Pedagogical University	150	6			

Table 2: The data attitude survey in two groups

Students group's University	Number of students	The average result (median)	Standard deviation
Kazan Federal University	156	4.84	0.8341
I.Yakovlev Chuvash State Pedagogical University	150	4.05	0.9253

implementation (two) of life values and reasons of their realization, such as external reasons (three), personal capacity (four), personal efforts (five). Questions were followed by five-point Likert scale questions (using strongly agree; agree; neither agree nor disagree; disagree; strongly disagree) exploring respondents' value orientation. For each answer student received a mark from one to five points according to the Likert scale. The total result of each student could be from one to five. The results of the attitude survey were presented in the Table 2.

The analysis of the results demonstrated the maximum of diversity between the average results in two groups based on the of medians and the obtained value of the standard deviation less than one. These conclusions let us stated that students from Kazan Federal University demonstrated higher level of value orientations after learning the special online course then students form I.Yakovlev Chuvash State Pedagogical University.

Based on the experimental work results was concluded that the learning special online course allowed to increase the level of knowledge and value orientations for future music teachers from Kazan Federal University who learned this course than from I.Yakovlev Chuvash State Pedagogical University had been learning in a regular way.

5 DISCUSSION

Regular music teacher professional activity requires the ability to manage students' vocal singing, listening to music, playing elementary musical instruments solo and in an ensemble, explanation musical history and theory, creation of musical compositions. All these types of activity should be used in the strict system and combined with each other. In contradictory to this goal the University musical education offer the training all the skills separately, when different professors explain each one independently from all the system. In order to reach success training the vocal or playing musical instrument skills students became unable to understand the main trend of their professional training include the values, disposition and even skills that should demonstrate real musical teacher in his actual work in school.

In an effort to achieve success training the vocal or playing musical instrument skills students become unable to understand

the main trend of their professional training includes the values, disposition, and even skills that should demonstrate real musical teacher in his actual work in school. While they trying to remember dozens of hours of music in order to prepare for an exam of musical history, they know nothing how to manage the process of listening to music for schoolchildren. Despite they collect plenty of musical facts include data from composers' biography of harmony laws, they are not ready to discuss the meaning of music, emotional effect, or interpretation content. Learning by heart vocal and instrumental music each semester for passing regular exams students unable to create any musical composition by themselves or improvise.

The online course (SPOC) based on signature pedagogy allows bridging the gap between the academic knowledge and professional practice through the implementation of three fundamental dimensions of any profession: surface structure (all forms of interaction between educational process participants), deep structure (the methodology in a subject field), and implicit structure (values and dispositions of real professional activity) [42].

According to Shulman's' model, the surface structure in the online course was demonstrated by the forum, chat, webinar for student-teacher interaction as well as individual consulting to cover students' special needs and control their homework.

Due to implement the deep structure of music teacher education were used specific methods include musical reflections and algorithm for musical content analysis. Students used these methods in training skills of understanding and explanation musical content and meaning. Besides they created arts compositions by chosen themselves poetry and music. Their records were compared, and the winners of the competition got the opportunity to load their artistic work into the official page of the musical department of Kazan Federal University in the social network Instagram.

The implementation of implicit structure included specify features of professional thinking such as values, attitudes, dispositions of real professional activity. For this purpose, interaction with schoolteachers who have real practice was organized. This interaction included watching video of school music lessons, visiting specify sites, interview of schoolteachers, reading information about them, organizing events for school children. Through all

these forms of activity relevant issues were discussed for sharing professional experience.

6 CONCLUSIONS

The research work results allowed us to conclude that the design of an online course (SPOC) based on the signature pedagogy implemented by specify features of professional activity music teacher allows students to improve their knowledge and skills directly according to professional needs.

This research has some limitations such as analysis of data obtained in the pandemic time when all the educational process in both universities was shifted into the online way. So, if students had been learning in the traditional face-to-face way at least in one university, results can be another.

Despite the limitations, some benefits of implementation of online course based on signature pedagogy and using SPOC technology were found such as:

- unlimited access to the content of knowledge and teachers' advice and recommends for improvement of musical performance skills;
- active exchange of musical experience between wide range of participants, discussion of them, critical analysis of actual problems;
- close interaction with a teacher for designing individual learning plan;
- comfortable way for self-improvement of students' knowledge and art creative skills through the productive training practice.

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