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HOW TO EMPOWER ONLINE TEACHING: 12 PRINCIPLES FOR HIGHER AND POSTGRADUATE EDUCATION

Abstract. The global pandemic COVID-19, which began in 2020, has brought about new challenges to Ukraine's higher and postgraduate education institutions. Despite the previous experience of providing online education courses, one of the main challenges to these institutions now remains to perform effective online teaching, which requires a proper theoretical and instructional basis. The study aims to outline efficient online teaching principles and best practices of how online teaching can provide effective interaction in the virtual online classroom with the aid of online learning management systems, online educational technologies, and digital learning tools. The article suggests a framework of twelve principles of effective online teaching determined for higher and postgraduate education that is deployed at five levels grouped according to specific online teaching issues (Level 0. Lecturer readiness, Level 1. Course planning, Level 2. Students' facilitation, Level 3. Course content dissemination, and Level 4. Course feedback). Each identified principle at every level is covered with examples of specific teaching methods and best practices of how it is used to enhance the effectiveness of online teaching in higher and postgraduate education. To perform most effectively in an online education context, every lecturer should use each level from the developed framework and each principle from the level. However, even a partial application of certain principles will increase the efficiency of the online teaching process. The suggested five-level framework of twelve principles will be helpful for lecturers, professors, and other academic staff of universities and institutes of higher and postgraduate education when providing online and distance education.

Keywords: higher education; postgraduate education; online teaching; principles; examples.

1. INTRODUCTION

The problem statement. With the dramatic changes caused by the global pandemic over the last three years, the relevance of online courses and distance education is rapidly increasing in all higher and postgraduate educational institutions. The top requests are teaching academic disciplines online and performing most interactions between lecturers and students in a virtual educational environment.

Despite previous experience in distance education, successful implementation of some courses in an online format, and a particular blend of traditional and online learning technologies, many academics showed critical unpreparedness for online teaching. The problem is caused by the fact that most scientific articles and instructional materials have mainly concentrated on *online learning issues* (educational process from the student perspective), but not on *online teaching* (educational process from the point of view of a lecturer, a professor, or a tutor).Therefore, studying theoretical aspects and instructional practices of effective online teaching in higher and postgraduate education institutions has become the key challenge for contemporary investigations and a promising prospect for future research.

Analysis of recent studies and publications. Different aspects of improving teaching effectiveness have always been the focus of scientists' and instructors' research.

A wide range of issues related to effective teaching has been studied in works [1] – [4]. In particular, scholars have analyzed: emerging perspectives on learning, teaching, and technology (M. Orey) [1], putting education in "educational" apps (K. Hirsh-Pasek et al.) [2], equity in access, use, and outcomes of new technology and digital worlds (M. WarschauerandT. Matuchniak) [3], principles of instruction for research-based strategies (B. Rosenshine) [4]. As a result, current effective teaching and learning cannot be realized without the use of educational and information technologies, since they are based on algorithms and detailed instruction.

Several publications were devoted to identifying principles of effective online pedagogy: ten core principles for designing effective learning environments (J. Boettcher) [5], eight principles of effective online teaching (C. Cheung and J. Cable) [6], how to teach the principles of effective online course design (C. Gormley) [7], three principles of effective online pedagogy (B. Pelz) [8], ten principles of effective online teaching and offered best practices in distance education (L. Ragan) [9], principles of effective teaching and practical examples for the classroom and blackboard (B. Kerns et al.)[10].

However, the problem of identifying the principles of effective online teaching for higher and postgraduate education requires further research, which confirms the relevance of our study.

The research goal is to identify twelve of the best principles for effective online teaching in higher and postgraduate education and to produce recommendations about effective online teaching to lecturers, professors, and academic staff, who teach courses online.

2. RESEARCH METHODS

The study implemented a qualitative, inductive research design with all appropriate ethical concerns taken into consideration to comply with the norms and standards of the field.

The research methodology employs the following theoretical methods: literature review on the research issue for the conceptualization of online teaching issues; analysis, synthesis, description, and definition to determine and clarify principles of effective online teaching; qualitative evaluation of outlined principles for higher and postgraduate education levels;

ranking top twelve principles and accumulation of examples of how to implement thedefined principles in higher and postgraduate education online courses.

To identify the effective online teaching principles, we performed a limited literature review on the best online teaching techniques and practices, published in books and articles or obtainable on the official Internet sites of higher and postgraduate education institutions.

As a result of the conducted literature review, we collected over 60 principles of online education with different impacts and implications of online lecturer's actions, alongside the main issues of online courses implementation (lecturer readiness, course planning, students' facilitation, course content dissemination, and course feedback).

Then, the collected principles were applied in the online classroom conditions via lecturing online courses provided by the Institute of Postgraduate Pedagogical Education of Chernivtsi region, Yuriy Fedkovych Chernivtsi National University, and Khmelnytskyi Humanitarian Pedagogical Academy.

The gained experience led to outlining a five-level framework of twelve principles that we consider the most important and purposeful for effective online teaching in contemporary higher and postgraduate education.

Finally, each defined principle was illustrated by examples of specific teaching methods of how to use it in the teaching of higher and postgraduate education online courses.

3. THE RESULTS AND DISCUSSION

Identifying the best principles of effective online teaching foremost requires clarification of the essence of the concept "principles" in recent research. M. Byrka [11] interpreted the concept "principles" as a set of outgoing regulatory requirements for the organization of an educational process defined through the specifically targeted rules, regulations, and recommendations that ensure its efficiency and success. Moreover, the author suggests that all principles are interrelated and determine each other.

Therefore, the outlined principles of effective online teaching should offer detailed instruction for lecturer activities, which ensures the efficiency and success of online courses provided by higher and postgraduate education institutions.

Based on the literature and the experience of the teaching faculty in lecturing online courses, twelve principles of effective online teaching in higher and postgraduate education institutions were recommended: 1) be prepared to teach online, 2) make it a group effort, 3) be present in your course and parse your time, 4) plan student activities performed bichronously, 5) encourage students to be active learners, 6) encourage students to develop self-regulation, 7) recognize and value diversity, 8) recognize and implement multiple learning styles, 9) recognize and implement multiple intelligences, 10) provide meaningful tasks and activities, 11) use modeling and worked examples, and 12) give prompt feedback.

Figure 1 summarizes the five-level framework of the outlined twelve principles of effective online teaching grouped by the main issues: lecturer readiness, course planning, students' facilitation, course content dissemination, and course feedback.
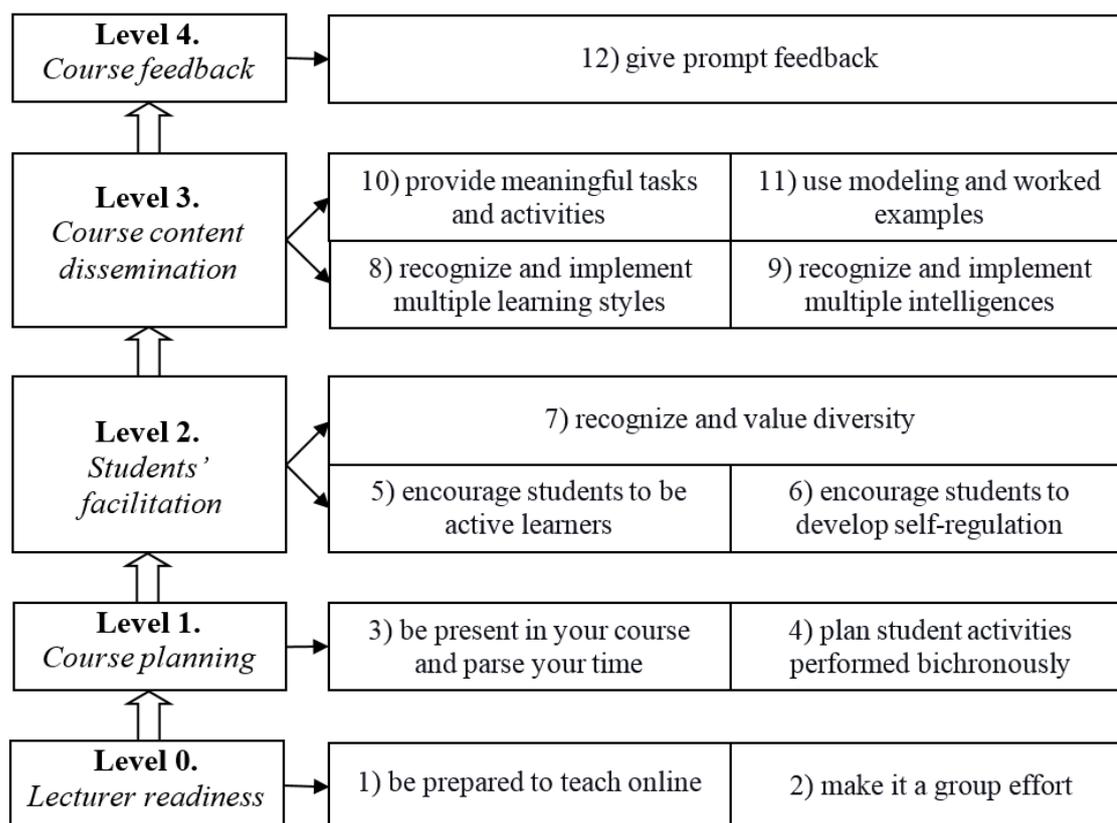
Figure 1. The five-level framework of twelve principles of effective online teaching

Source: This figure is the authors' unpublished, original work created for this publication.

The following part details every level of the developed framework with best practices for the application of each of the twelve principles of effective online teaching in the higher and postgraduate education context.

3.1. Level 0. *Lecturer readiness*

At the very beginning of the online teaching process, even before it started, lecturer readiness becomes the core issue. Therefore, Level 0 of the framework includes two leading principles: 1) be prepared to teach online, and 2) make it a group effort.

Principle 1. *Be prepared to teach online.*

Teaching online is somewhat different from traditional teaching. Primarily, it is the process that occurs via the Internet, and therefore an online lecturer should be comfortable using computers, ICT, and Internet resources. Among the knowledge and skills required to teach online are computer skills, Internet skills, experience in online learning environment (creating digital resources (PowerPoint presentations, videos, audio lectures, and pdf guides), messaging services (webinar, email, blog, one-on-one, and group video calls, etc.), and working with aCourse Management System (CMS), as well as aLearning Management System (LMS) (C. Cheung and J. Cable [6], C. Gormley [7], L. Ragan [9], R. Weale [12]).

Secondly, teaching in the online context requires a new style that embodies innovative teaching methods, strategies, and instructional techniques specific to the online classroom environment. As R. Weale [12] argues, "the person leading a successful online class must be a proponent of facilitative learning, and have confidence in the system to make it work". Consequently, an effective online lecturer should facilitate students' active learning in the

online environment and support them in sharing personal knowledge and understanding of the subject of study.

Best practices performed independently to enhance lecturer readiness to teach online:
– develop a strategy to ascertain any extra necessary skills and competencies required;
– coach yourself through an online video course concerning CMS and LMS used by the host university;
– rehearse all steps in building an online course content;
– foresee the consequences of failing to anticipate potential problems in online teaching and be able to make adjustments when necessary.

Principle 2. *Make it a group effort.*

The online lecturer readiness is hard to achieve alone. Therefore, effective online lecturer training cannot be performed without support from other competent faculty members and academic staff. "Do lean on your peers as you prepare for your fall semester teaching. Collectively, the rest of the Harvard faculty is the single best resource to draw upon for advice on any question you might have about your teaching" (Harvard Guidelines for Fall Course Design [13]). Such effort will let the online lecturer identify his/her weaknesses in performed training and overcome them, alongside actualizing the challenges of online teaching from a broader perspective that contains different points of view.

Best practices performed in a group to enhance lecturer readiness to teach online:
– enroll in staff development programs offered by the host university;
– become a member of a community of online learning and teaching practice;
– cooperate with academic staff involved in online teaching about the implementation of specific pedagogical approaches, challenges, and technical issues;
– attend online lecture classes conducted by colleges and free online lectures offered by other higher and postgraduate education institutions;
– discuss with other competent faculty members your own ideas about online teaching issues and receive feedback from them.

3.2. Level 1. *Course planning*

At the next level, to perform effective online course planning, a lecturer should implement principles 3) be present in your course and parse your time and 4) plan student activities performed bichronously.

Principle 3. *Be present in your course and parse your time.*

During an online course, the lecturer should be permanently present in a virtual classroom, but does not have to be available 24/7, which means that the lecturer may pick and choose between one-on-one online real-time interaction, online group discussions, and critical presence in a virtual classroom.

As C. Cheung and J. Cable [6] mentioned, it is considerably challenging to get a good balance between enhancing a lecturer's presence in a virtual classroom and overloading with all emails, chat messages, and discussion board posts. Therefore, an effective online lecturer should manage an online course in principal aspects such as "workload, time management, and sustainability to ensure schedules are maintained and stress is avoided" (J. Boettcher [5]). Besides, there is a group or one-on-one online interaction with students (Harvard Guidelines for Fall Course Design [13]).

Best practices to support this principle:
– provide students with short videos which show them how to operate in LMS used by the home university, obtain access to learning materials and pass corresponding assignments, and provide feedback on received tasks;

- define work hours. Usually, in online education settings, the lecturer does not have assigned working hours. In fact, without a clear schedule, the online lecturer may be constantly distracted by problems in their personal life or use more time for rest and entertainment. Therefore, for productive work, it is necessary to set comfortable time limits and determine the hours for posting new materials, finding or solving new problems, checking e-mail, reading discussion board postings, evaluating students' responses, and other activities in 1-on-1 and group formats;
- define the response time for received e-mails, students' postings on online discussion boards, and chats;
- decide what comments and posts to respond to;
- don't turn an online class with 20-30 students into a one-on-one interaction;
- provoke online discussions between students, and pick and choose where to insert your voice in real-time;
- host weekly Zoom or Google Meet group sessions for consulting students;
- organize regular one-on-one video communication by Skype for individual student consulting;
- plan for the unplanned.

Principle 4. *Plan student activities performed bichronously.*

In online course planning, as a consequence of the previous principle, it is equally important to plan students' activities as well. Through LMS students are performing *bichronous activities* (a blend of asynchronous and synchronous activities) (A. Peterson, P. Beymer, and R. Putnam [14]), which offer flexibility and accommodation for them but require detailed planning of online lecturer presence in the course.

Asynchronous activities and communication happen via asynchronous content for independent study of course materials, discussions on online boards, surveys, pre-class polls, etc. (J. Boettcher [5]). This "in turn opens up different opportunities for your live sessions" (Harvard Guidelines for Fall Course Design [13]).

Best practices for better planning of students' bichronous activities:
- determine throughout the week and publish in LMS the timescale of online course activities (when to finish assignments, do quizzes, watch lecture videos, attend video conferences, and complete tests);
- publish in LMS information about the response time for received emails, students' postings on online discussion boards, and chats;
- publish in LMS information about the date and time when the lecturer can communicate in 1-on-1 or group formats;
- publish in LMS information about weekly Zoom or Google Meet group sessions;
- publish in LMS information about the date and time for possible individual student consulting via Skype;
- set up LMS date alerts for students concerning the assignments' due dates.

3.3. Level 2. *Students' facilitation*

The foremost issue of online teaching, considered at the second level of the developed framework, is students' facilitation. Its successful resolution requires the implementation of principles: 5) encourage students to be active learners, 6) encourage students to develop self-regulation, 7) recognize and value diversity, 8) recognize and implement multiple learning styles, and 9) recognize and implement multiple intelligences.

Principle 5. *Encourage students to be active learners.*

The online education model requires taking active roles not only by lecturers but students as well. Therefore, the online lecturer's main challenge in this context is to encourage students to be active learners, which means to organize activities that empower, engage and stimulate every student to be in the center of the learning.

Active learning is an educational strategy that emphasizes the stimulation of dialogues between lecturer and students alongside communication between students themselves.

The online lecturer performs as a facilitator in active learning who organizes educational activities that engage every student directly rather than relying too heavily on lectures and memorization. No less important in this context is that students "take the lead in their learning and regard their teachers as a partner to guide them through the learning process and motivate them for further endeavors" (C. Cheung and J. Cable [6]).

Best practices to encourage students to active learning:
- inform students about implicit and explicit online course objectives and their outcomes;
- practice open-ended questions and tasks in learning materials;
- present in online course discrepant ideas that conflict with student's prior knowledge or beliefs. Such discrepancies can elicit students' curiosity and prompt them to seek information that will resolve it;
- give students clear guidelines for group activities and implement an evaluation mechanism on their group and individual participation in group work;
- encourage students to exchange theories by comparing and contrasting flows of information and share knowledge through the collaboration of ideas and principles;
- use KWL (what the student Knows, Wants to know, and has Learned) chart to help students to connect new knowledge to their prior knowledge (M. Orey [1]);
- encourage students to ask as many questions as possible in an LMS discussion board (forum), chat, or through direct e-mail;
- provide online group discussion or critique opportunities among students.

Principle 6. *Encourage students to develop self-regulation.*

Active learners are self-regulated, aware of effective learning strategies, and much more independent than ordinary ones. Subsequently, self-regulation is a mandatory property of an active learner, another vital aspect at the second level of the developed framework. The most essential in this context is that "self-regulated learners are aware of effective learning strategies for enhancing learning performance" (B. Rosenshine [4]). Therefore, during online learning, a student's self-regulation is based not only on the knowledge, skills, and abilities of how to learn but requires the student's capability in each given case to choose one effective learning strategy out of many known learning strategies, which implies the learner's ability to plan and to control their own learning process.

Best practices to support students in self-regulation:
- establish patterns of preferable activities of the online course;
- communicate clear expectations to students during online teaching and via LMS;
- provide challenging but achievable tasks and activities;
- motivate students to make lists of goals to accomplish while studying the online course;
- help students to foresee the consequences of failing to study;
- help students to schedule daily studying and homework time;
- enhance students' intrinsic motivation and volition.

Principle 7. *Recognize and value diversity.*

Current online education in higher and postgraduate institutions in Ukraine proliferates educational opportunities for students from different cultural and ethnic backgrounds, with differences in upbringing and age, socioeconomic status, regional differences, including students with special needs or disabilities. However, this kind of learning poses a number of

challenges in recognizing and valuing diversity to both the online lecturer and students because of the differences in prior educational experiences, as well as in communication or social interaction styles (D. Smith and D. Ayers [15], M. Wang [16], D. Yang, et al. [17], Z. Zaidi et al. [18]).

A primary challenge comes from the strong dependence of all activities in online education on the lecturer's cultural and ethnic background. Consequently, an effective online lecturer should not privilege students from the same background and deprive students whose backgrounds differ. Another challenge arises from the heterogeneity of the online learning environment where students demonstrate different levels of engagement in online activities, especially in collaboration with students from various backgrounds and upbringings. Furthermore, most online courses are designed on a "one-size-fits-all" model with little to no attention to addressing issues of the cultural diversity of students from different backgrounds. Therefore, the online lecturer should recognize students' diversity and value it.

Best practices to address issues related to recognizing and valuing students' diversity:
- be aware of your personal preferences (favoritism, point of convergence, communication style, and social relations);
- be sensitive to the fact that students from other parts of the country could interpret online education, lecturer/student or student/student relationships, as well as virtual classroom activities in different ways;
- promptly convey to students that you want to be sensitive to their culture or ethnic background;
- be respectful in communication with all students, regardless of their abilities, religion, or membership in a particular social group;
- eliminate gender bias and incorporate results of research conducted by women.

Principle 8. *Recognize and implement multiple learning styles.*

In the online learning process, as well as in traditional education, acquiring new knowledge occurs in one preferable student learning style (visual, aural, reading/writing, and kinesthetic/tactile), but the learning style differs from student to student (M. Orey [1], J. Boettcher [5], C. Cheung and J. Cable [6], B. Pelz [8], R. Weale [12]). Consequently, in the online teaching context, the effective lecturer should consider and incorporate the most common learning styles that correspond to the chosen profession.

Best practices to support students' multiple learning styles in the online classroom:
- identify the preferable format of educational materials (audio, video, text, image) for most students as well as individual student's preferences;
- present information and require student responses in a whole variety of formats;
- provide students with a choice of preferable educational materials format;
- use mnemonics to remember facts;
- use mind maps for presenting hierarchical, complex theories, models, and concepts.

Principle 9. *Recognize and implement multiple intelligences.*

Multiple intelligences represent deeper consideration of a person's intellectual abilities and strengths than learning styles and are more solid. The "Theory of Multiple Intelligences" developed by Dr. Howard Gardner (H. Gardner [19]) tries to capture the full range of human potential in intellectual abilities and talents that a person possesses.

According to Gardner's theory, a person accounts for eight different intelligences: 1) linguistic (words, texts, language and speaking, remembering by hearing), 2) logical-mathematical (logic, abstract concepts, categorization, classification, problem-solving, pattern recognition, calculations, etc.), 3) spatial (visualization, generation, retaining, retrieving, and transforming of images, puzzles, Scrabble, crosswords, remembering by seeing),4) bodily-kinesthetic (excellent physical coordination, skills in dancing, sports, and handmade activities,

remembering by doing), 5) musical (the ability to recognize and easily remember sounds, rhythms, timbres and tones, and to enjoy music, remembering by patterning), 6) interpersonal (the ability to understand and relate with others, effective relationships managing and adaptation to society, empathy, speaking and communication skills), 7) intrapersonal (the ability to control feelings, reflection, strong intuition, high level of self-confidence and independence, awareness of your own strengths and weaknesses, constantly improving yourself), and 8) naturalist (identifying, understanding and classifying patterns in natural world environment, sensitivity, inspiration and appreciation for nature).

Recently, Gardner has added one more intelligence – "existentialist" (perception of life and existence, tendency to ponder deep questions concerning existence, and belief in the transcendence of soul) (N. Bakić-Mirić [20]).

Given this, an effective online lecturer should recognize and implement different intelligences specific to the chosen profession.

In the context of our study, such intelligences are: *linguistic, logical-mathematical, visual-spatial, interpersonal,* and *intrapersonal.*

Best practices to bring this principle into effective action are given below.

For *linguistic intelligence*:
– make plenty of reading opportunities in the online course;
– use guided verbal imagery;
– provide students with instruction manuals and guides concerning how to use a certain technology or method specific to the chosen profession;
– direct students to write their guide or an instruction manual;
– provoke students to formal speaking;
– promote online debates via ZOOM or Google Meet on topics specific to the chosen profession;
– naturally weave humor and jokes in online teaching.

For *logical-mathematical intelligence*:
– provide a logical image of a studied concept or process;
– provide opportunities for problem-solving using logic and/or math;
– encourage students to involve calculations in the chosen profession and the real-life context;
– provoke students to use logic and pattern recognition;
– motivate students to conduct a survey and logically present the results.

For *visual-spatial intelligence*:
– use graphic organizers; use mind mapping for the presentation of a complex concept or process;
– use guided visualizations of a studied concept or process;
– get students to create a visual representation of a studied concept or process;
– get students to draw a diagram or develop a PowerPoint presentation.

For *interpersonal intelligence*:
– encourage students to collaborate in pairs and groups;
– improve students' collaborative skills through providing plenty of group and pair work opportunities;
– provide more student-student and lecturer-student real-time communication and interaction via Skype, chat, etc.;
– enhance students' empathy.

For *intrapersonal intelligence*:
– encourage students for permanent self-awareness;
– provide students with plenty of self-reflection opportunities;

‒ encourage students to reach altered psychological states of consciousness induced through music or meditation.

3.4. Level 3. *Course content dissemination*

Equally significant for effective online teaching is the course content dissemination issue. Its successful resolution requires the implementation of two principles: 10) provide meaningful tasks and activities, and 11) use modelling and worked examples.

Principle 10. *Provide meaningful tasks and activities.*

No student wants to do meaningless, unimportant activities. Therefore, online course content should integrate diverse tasks and activities relevant to the current subject or the chosen profession. Such activities help to create strong motivation and immerse students into the learning process facilitating students' feeling of inclusion and promoting new ideas.

Best practices for this principle:

‒ focus during online teaching on meaningful aspects of the studied course that concern the current subject or the chosen profession;

‒ encourage students at the beginning of the semester to promote their own goals of mastery of the online course, as well as establish middle and short-term self-referenced goals;

‒ motivate students to create personally relevant and meaningful educational products and articles;

‒ promote students to perform an independent search of information, materials, and examples that concern the subject of study;

‒ get students to interact with experts from the chosen profession.

Principle 11. *Use modeling and worked examples.*

The effective lecturer in teaching an online course should always use modelling and worked examples specific to students' specialization or profession. These kinds of cognitive support provide diverse opportunities for deeper and better understanding by students of broad concepts, ensure the explicitness of the problem-solving sequence, and make its fuzzy parts well-defined.

Modeling is an instructional strategy based on Social Learning Theory which views learning as a demonstration of human behavior provided by the lecturer and its observation by students (M. Orey [1]). The aim of modeling in education is students' perceiving the cognitive processes of an expert and imitation of particular skills or behaviors that rely on a specialization. Worked examples is an instructional strategy that supports student understanding and comprehension through a problem formulation, providing the solution, clearly defining each solution step, and illustrating acceptable results (B. Rosenshine [4]).

Best practices for effective implementation of modelling and worked examples in online teaching:

‒ think aloud while solving problems specific to student specialization;

‒ model an expert's performance through identifying and representing cognitive processes engaged by the experts during problem-solving;

‒ demonstrate, practice, and reinforce the desired behavior by a respected role model and through role-playing;

‒ encourage students to think like experts and treat them as experts;

‒ provide worked examples with alternate questions for students to solve independently;

‒ get students to alternate interactive online resources with video learning, tutorials and guides available on the Internet;

‒ use case studies specific to student specialization;

– use short and long-time internship that allows students to observe an expert who is highly proficient in future or current profession;
– motivate students to use found online worked examples on their own;
– anticipate difficulties students may have with the problem and demonstrate how to cope with difficulties (if needed).

3.5. Level 4. *Course feedback*

The last level of the framework of twelve principles of effective online teaching includes principle 12) give prompt feedback.

Principle 12. *Give prompt feedback.*

According to this principle, an effective online teaching lecturer should permanently give operative feedback to students, which helps them know if their goals are being met and gives them emotional support to enhance their motivation and learning performance (M. Orey [1], B. Rosenshine [4], C. Gormley [7], B. Kerns, et al. [10]).

C. Cheung and J. Cable [6] considered prompt feedback highly essential to learning because it allows students to promptly evaluate the current level of knowledge through reflection on what they have learned already and what they still have to learn in the future, centering on the lecturer's recommendations concerning how to improve their learning performance and achieve course objectives.

Best practices for providing feedback in online teaching:

1) for *formative/summative feedback*:
– define the response time for received e-mails, students' postings on online Moodle discussion board, and chats;
– encourage students to reflect on how they assess themselves in what they know and what to learn;
– use frequently short quizzes for pre-class assessment;
– apply anonymous surveys that allow students to express their concerns about online course content, as well as its weaknesses, frailties, and fragilities;

2) for *individual/group feedback*:
– use e-mail to provide instant person-person feedback;
– use Viber-chat for personal and group feedback;
– use short videos to supply group feedback;
– use properly embedded Moodle quizzes and tests;
– use web-based testing software that provides rapid feedback;
– monitor Moodle boards frequently and give proper answers to students' questions;

3) for *written feedback*:
– react to students' draft documents by using the hidden text feature in Microsoft Word;
– provide feedback to raised questions by using hyperlinks within the text of the answer;
– use speech recognition software for giving more quick feedback.

4. CONCLUSIONS AND PROSPECTS FOR FURTHER RESEARCH

Due to the pandemic crisis, online teaching nowadays has become the main attribute of the learning process at any level of education, including higher and postgraduate education. As a result, each lecturer had to master online teaching at the proper level.

The research demonstrates the features of online education from the lecturer's point of view and provides a framework of twelve principles for effective online teaching in higher and postgraduate education institutions.

The developed framework considers online teaching phenomena on five levels:
- ✓ Level 0. Lecturer readiness (principles: 1) be prepared to teach online, 2) make it a group effort);
- ✓ Level 1. Course planning (principles: 3) be present in your course and parse your time, 4) plan student activities performed bichronously);
- ✓ Level 2. Students' facilitation (principles: 5) encourage students to be active learners, 6) encourage students to develop self-regulation, 7) recognize and value diversity, 8) recognize and implement multiple learning styles, 9) recognize and implement multiple intelligences);
- ✓ Level 3. Course content dissemination (principles: 10) provide meaningful tasks and activities, 11) use modeling and worked examples);
- ✓ Level 4. Course feedback (principle: 12) give prompt feedback).

Each outlined principle is supplemented with examples of the best practices for effective online teaching, successfully tested in the Ukrainian higher and postgraduate educational institutions.

The outlined twelve principles and examples demonstrated in the article will be helpful for lecturers, professors, and other academic staff of higher and postgraduate education establishments when teaching any course online.

Further research will focus on the determination of psychological and pedagogical conditions of effective online teaching in higher and postgraduate education contexts.

AUTHORS' CONTRIBUTION

Marian Byrka and Igor Cherevko devised the project, its main conceptual ideas and performed the characterization of principles. Inna Shorobura proposed to group the identified principles by the main issues of online course implementation. Marian Byrka constructed the five-level framework of the twelve principles of effective online teaching and designed the figure. Nataliia Yakubovska, Inna Shorobura, and Natalya Kurish contributed to the implementation of the research, to the analysis of the results and to the writing of the paper.

All authors have participated in the research process: in the writing of the paper and the analysis of the books, articles, and official Internet sites, discussing the results, providing critical feedback and approving the final version of the paper.

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ЯК ПІДВИЩИТИ РІВЕНЬ ВИКЛАДАННЯ ОНЛАЙН: 12 ПРИНЦИПІВ ДЛЯ ВИЩОЇ ТА ПІСЛЯДИПЛОМНОЇ ОСВІТИ

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Анотація. Глобальна пандемія COVID-19, що розпочалася у 2020 році, стала передумовою для появи нових викликів, що постали перед закладами вищої та післядипломної освіти України. Незважаючи на наявність певного попереднього досвіду надання онлайн-курсів, одним з головних викликів для цих закладів зараз є ефективне викладання в онлайн форматі, що потребує відповідної теоретичної та методичної основи. Мета дослідження – визначити ефективні принципи викладання онлайн та підібрати найкращі приклади онлайн-викладання, що можуть забезпечити ефективну взаємодію у віртуальному онлайн-класі засобами систем управління онлайн навчанням, онлайн-освітніх технологій та цифрових засобів навчання.

У статті пропонується структурна конструкція з дванадцяти принципів ефективного викладання онлайн, визначених для вищої та післядипломної освіти, яка розгортається на п'яти рівнях, згрупованих відповідно до конкретних питань онлайн-викладання (Рівень 0. Готовність викладача, Рівень 1. Планування курсу, Рівень 2. Фасилітація студентів, Рівень 3. Поширення змісту курсу та Рівень 4. Зворотний зв'язок про курс). Кожен з визначених принципів на кожному рівні з п'яти рівнів ілюстрований прикладами відповідних методів навчання та найкращого практичного досвіду їх використання для підвищення ефективності онлайн викладання у вищій та післядипломній освіті.

Для досягнення найвищої ефективності в онлайн освіті кожен викладач повинен використовувати всі рівні з розробленої конструкції, а також усі принципи цього рівня. Проте навіть часткове застосування окремих принципів забезпечить відчутне підвищення ефективності онлайн навчання.

Запропонована п'ятирівнева структурна конструкція з дванадцяти принципів буде корисною для науково-педагогічних працівників університетів та закладів вищої та післядипломної освіти (лекторів, викладачів, методистів та іншого академічного персоналу) при наданні послуг онлайн та дистанційної освіти.

Ключові слова: вища освіта; післядипломна освіта; викладання онлайн; принципи; приклади.