STRATEGIES IN PLANNING RESEARCH INTEGRITY TRAINING (EVIDENCE OF UKRAINE)

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ABSTRACT

In recent years, much work has been done to promote integrity in academic community in Ukraine. Still, educational interventions introduced to the local level have not yet become an effective instrument to foster integrity in academia. Current research aims to discuss the key motivational factors that influence the effectiveness of integrity trainings for early-career researchers at Ukrainian universities in order to identify the possible gaps during implementation of research integrity education at the institutional level; highlights the role education plays in fostering research integrity; explores the key factors that influence early-career researcher's professional development; proposes the possible content of integrity workshop for early-career researchers; analyzes the interview findings to better understand the impact of education interventions on research behavior; and offers recommendations that could help the academic community develop educational content that increases awareness on research misconduct and detrimental practices.

The article is based on the experience of conducting the research integrity workshops at the regional institution of higher education. Data was carried out as qualitative face-to-face semi-structured interviews to learn about the sources of knowledge on research integrity. The results of the study have shown that integrity trainings at Ukrainian higher education institutions goal not only to introduce researchers to integrity knowledge, but also to engage them in discussion about responsibility in science. The findings of the study may help to identify key factors that influence the effectiveness of research integrity trainings and develop effective tools to promote research integrity at the Ukrainian higher educational institutions.

Keywords: academic integrity; research integrity; integrity education; motivation; research community; research behavior; responsible conduct of research; research misconduct.

1. INTRODUCTION

In recent years, academic community in Ukraine has been influenced by significant reform implementations, defined in the Law of Ukraine on Higher Education and the Law on Science and Scientific and Technology Activities. This new phase, targeted at "systematic modernization of the national education framework" (NAESU, 2017), is characterized by a convincing increase in attention to the quality of research. Governmental participation in promoting international standards of research and publishing has also increased, influencing all the stakeholders of the research industry.

Nevertheless, in many cases these efforts have also boosted bad practices. It is important to keep in mind that research integrity in Ukraine has taken a wide discussion in conditions when financing of science is far not enough. These issues are even more visible at regional institutions of higher education. Decrease in student population, limited governmental funding for science, combined with regulatory government policy and hyper attention to science metrics, provokes university management for pressing academic stuff to publish.

As a consequence, members of the research community are aware about 'easy ways' to deal with demands of the authorities and promote their careers. Therefore, researchers are more concern about not to be caught than to conduct the research properly. There is no empirical data on what amount of papers published by Ukrainian researchers contains plagiarized information or is based on non-valid data. But there is a strong concern in the society that whole scientific enterprise suffers from corruption and absence of science as it is.

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Taking into account the above mentioned, the area of specific interest is the implementation of integrity education practices at the institutions of higher education in Ukraine. To identify the possible gaps during implementation of research integrity education at the local level, we analyzed the experience of conducting academic writing and research integrity workshop at regional institution of higher education.

In this article, we will (1) explore the key factors that influence early-career researcher's professional development, (2) highlight the role education plays in fostering research integrity, (3) propose the possible content of integrity workshop for early-career researchers, (4) analyze the interview findings to better understand the impact of education interventions on research behavior, (5) and offer recommendations that could help the academic community develop educational content that increases awareness on research misconduct and detrimental practices.

2.   LITERATURE REVIEW

2.1.   Background

Today in Ukraine, strengthening the research potential is recognized as an inalienable component of quality assurance and enhancement in higher education. At the same time, there is a threatening tendency of outflow of qualified scientific stuff from Ukraine. In the Ukrainian academic community, population of scholars under 35 of age is steadily declining and barely reaches 20% of the total cohort. In particular, recent polls of early-career scholars at the National Academy of Sciences of Ukraine have revealed that 42.2% of respondent's intent to migrate abroad (ZHABIN; KAZMINA, 2017).

The study on the dynamics of human potential in Ukrainian science (POPOVYCH; KOSTRYTSA, 2017) has shown that about 29% of researchers aged 35-39 left science during the period from 2011 to 2015. In overall terms, early-career researchers lose interest in an academic career, not willing to deal with lack of financing, corruption, negative institutional climate, and integrity violations.

Researchers distinguish widely spread practices of research misconduct in Ukrainian scientific society. The most common among them are plagiarism, falsification of experimental data, detrimental authorship, approving of research proposals with low novelty, corruption in reviewing and approving grant proposals. Nevertheless, according to recent reports plagiarism is still seen as "the only form of academic dishonesty specifically referred to in legislation" (OECD, 2017). In particular, the Law on Higher Education declares an obligation for higher education institutions to establish "an effective system to prevent and disclose academic

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plagiarism in research and scientific works produced by the faculty and learners" (Law of Ukraine on Higher Education, 2014 cited in OECD, 2017).

The key factors affecting integrity and provoking research misconduct are also identified in literature. Among them complicated hierarchy of academic titles and positions at academia, absence of necessary experimental and laboratory equipment, commercialization, not transparent stuff recruitment system, bureaucracy, and increased attention to scientific metric are recognized (DEHTIARIOVA, 2016: 207). As an example, a key motivation factor for recent Ph.D. holders to develop them researches is to promote their academic careers and follow the requirements of the government.

On the one hand, it motivates them for further professional development, but on the other hand, pressing to publish provokes further manipulations, as well as corrupt practices in reviewing and publishing. Thus, the mandatory requirements to publish papers for students and faculty stuff without the appropriate expertise, as well as time and resources for conducting high quality research, are recognized as a "compulsion to research misconduct" (YEHORCHENKO; SEREBRIAKOV, 2018).

Finikov (2016) emphasizes that "deviant behavior among actors and stakeholders in science" has become the basement of entire culture of imitation of science, or so called 'anticulture' in academia.

Ukrainian scientific society has articulated a demand for effective mechanisms for supporting researchers' professional development. However, in order to ensure high quality of science, institutions and societies have to provide instruction not only on the methodology of scientific research. As Yaroshenko (2011) mentions that development of the research competence as an important part of the scholar's professional activity only works if the value component is there. Value orientation is recognized as the main component of the research competence.

In other words, instruction has to cover the most critical issues of research integrity and responsible conduct of research developing awareness of the significance of scientific activity, and responsibility for maintaining high standards of science. In this context, a number of issues arise. What are the ways of creating conditions for developing the behavioral competences of the researcher? What is the role of educational initiatives in fostering the culture of research integrity? How effective these procedures may be for motivating early-career scholars for responsible conducting of research?

2.2.   Educational Interventions

Education in responsible conduct of research is recognized as the key mechanism for addressing and preventing of misconduct and detrimental practices. Instruction and training are considered as the most effective tools for fostering integrity within institution. At the same time integrity education "is affected by the context in which that education exists" (NASEM, 2016). With a goal to foster integrity in research and publishing, all the stakeholders in research enterprise have to develop and assess effective education that supports the culture of responsible science. Research institutions are recognized as directly responsible for providing education and training efforts that support a culture of integrity (NASEM, 2016).

According to the European Code of Conduct for Research Integrity (ALLEA, 2017), research institutions and organizations are responsible for ensuring appropriate training in research integrity and ethics for the stuff across the entire career pass. Moreover, the degree to which academic, social, and governmental institutions promote ethical engagement has an important effect on whether and how research integrity is taught formally (HEITMAN et al., 2016).

At the same time, the efficiency of various educational interventions in efforts to promote integrity is widely discussed. Literature on this topic offers strong arguments for research education and training as an important element of research enterprise. Responsible research training is recognized as an integral part of research since it aims to ensure that "knowledge, skills, and awareness essential to responsible research are intentionally, explicitly, and accurately conveyed" (NASEM, 2016).

Resnik (2015) suggests that deviations from norms of responsible science may occur either because of ignorance, or luck of knowledge and ill-preparedness of the researchers. The author states that "in both cases research integrity education may be useful, providing better understanding of ethical standards, policies and issues". Moreover, knowledge of professional standards and responsibility for research misconduct are essential components of research integrity culture.

There is no consensus on the best instruments for research integrity education. In different countries it may be a concern of national policy, with obligatory training for students on all the levels of education, promoting of institutional policies, or with no articulated policy at all. But the reality is that research misconduct appears to stay a serious issue for all the societies mentioned. Therefore, it provokes vide discussion on the effectiveness of any kinds

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of educational interventions on research integrity. Kalichman (2012) recognizes integrity education an essential tool for increasing knowledge of issues and practices, developing skills of responsible decision making, as well as forming attitudes toward open communication in science.

Israel et al. (2014) links integrity education with institutional policy in promoting responsible conduct of research. Furthermore, integrity policies need to function effectively within an educational environment "to frame the cognition knowledge about integrity within personnel affective values and attitudes" (SHEPHARD et al., 2015).

Ukraine isn't an exception in diversity of voices in public discussion on the problem or the issues of integrity education implementation. On the one hand, work in a field of promotion research integrity has facilitated development of strong societies run by a common purpose to raise the quality of science in Ukraine. A number of projects and initiatives to promote research integrity have been initiated by international agencies, organizations and societies. On the other hand, these initiatives haven't become of national policy on research integrity education so far. In some cases, those initiatives are used to declare institutions' commitment to academic integrity, and have become nothing more than just a trend.

3. METHODOLOGY

The article is based on the data obtained during training activities organized by the Early-Career Researchers Council at the State Agrarian and Engineering University in Podilya, a middle-sized regional higher education institution specializing on agriculture and rural development. The participants in the study are recent Ph.D. holders and doctoral students, attending trainings on research integrity at university. The fields they represent include agriculture, veterinary science, engineering, economics, and vocational education.

First of all, we conducted pre-workshop survey for early-career researchers to discover about what gaps in research integrity and research writing knowledge they are concerned the most. Participants mentioned that the key factor that influences their research behavior and may cause cases of questionable practices is the lack of knowledge on responsible conduct of research, as well as international publishing standards. Majority of doctoral students agreed that they need more professional support on such critical issues as academic writing; international standards of research reporting; publishing in peer-review journals.

Analysis of early career researchers' perception of research integrity also illustrates the complexity of the concept itself. A majority of interviewees agreed that research integrity

awareness is an important element of their professional development. They also admitted that during their first steps in science, supervisors were the main, and sometimes the only, sources of knowledge on research ethics. They also mentioned they still receive rather low support for the research integrity competence development at institutional level.

At the same time, the development of the workshop program included an analysis of the content and methods of carrying out trainings on academic writing and integrity, which were set up during 2016-2019 by such organizations as USAID (Support Academic Integrity in Ukraine Project), British Council, Ukrainian Educational Research Association, Ukrainian Association of Cognitive Linguistics and Poetics etc. As a result, workshop program included the following components:

- *International standards of academic writing;*

- *Plagiarism, self-plagiarism, and improper citation;*

- *International databases of peer-review literature;*

- *Publishing in peer-review journals;*

- *Opportunities for international academic mobility for early-career researchers;*

- *Proposal-writing.*

The main goal of the training was to engage early-career researchers with academic integrity issues that go beyond formal discussions, and to provide them with tools for improving research presentation competence. Training activities were targeted on developing academic writing skills, knowledge on referencing and citation, research proposing and publishing, authorship property basics etc.

Despite positive feedback from all the participants, problems arisen in a course of delivering and implementation trainings revealed a number of challenges. The workshop was aimed at doctoral students and early-career researchers. Though, workshop audience mainly consisted of recent Ph.D. holders and mid-career researchers. They were mostly interested in particular aspects of the workshop, such as publishing in peer-review journals process, or international study programs application procedures.

The participants used this event to get more information about opportunities for publishing, or cooperating with international educational projects. The place for sharing experience was created, but the integrity component was actually lost. It is worth to mention

that ethics itself have barely appeared on a site of a conversation on research integrity. Participants were more concerned about how not to cross a line between questionable practices and research misconduct.

To understand motivational factors that influence attitudes to trainings on research integrity, and, therefore, their impact on research behavior of early-career researchers we conducted interviews. Data was carried out as qualitative face-to-face semi-structured interviews to learn about the sources of knowledge about academic standards and academic integrity, as well as the tools for academic writing competence obtaining; the help postgraduate students receive from supervisors during their research work; and the strategies they use to get their research findings published.

The participants were also asked to introduce their own activity that may be used during the next training session. Data analysis included highlighting significant statements that provide an understanding of early career researchers' attitudes towards interconnections between academic integrity training, and actual research behavior. We tried to identify main issues from the point of view of early-career researchers, since they have to survive through this transitional period for integrity culture development.

4.   RESULTS AND DISCUSSIONS

4.1.   Research Integrity Training and its Impact on Early-Career Academics' Research Behavior

Doctoral students and recent Ph.D. holders are more active in publishing, either due to the requirement to introduce the results of their research to wider audience, or to the need to promote career. Sometimes it may provoke a desire to satisfy government or institutional requirements by any cost. Therefore, measures to encourage professional development of junior academic stuff may impact integrity negatively. Subsequently, qualitative approach in faculty assessment may provoke misconduct practices, such as fabrication of research results, plagiarism, bribing journal articles reviewers, cooperation with predatory journals, participation in fake conferences, and so called 'scientific tourism'.

Today in Ukraine, international organizations and professional societies are becoming one of the key actors in promoting international standards of research integrity. These organizations have initiated a number of academic writing and research integrity trainings in Ukraine, engaging researchers who have already felt the need for acquiring knowledge in research writing and proposing. One the one hand, most of the participants at these events is

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highly motivated to develop their skills. On the other hand, academic societies and other professional communities do not depend on quantitative performance indicators, as much as universities do. As a consequence, these factors generate an interest in the quality and integrity of research work. However, these workshops mostly use the training-for-trainers approach. One of the key indicators of the workshop effectiveness is further sharing of the best practices at the local level. In our opinion, major weaknesses of such events organization can be identified at the institutional level.

During the interview, participants often explained the difficulties with presenting their research findings by a general lack of knowledge on standards of research reporting and publishing:

- Sometimes, I do not understand what exactly they want from us. We are talking about the requirements for publications, but nobody actually explains how to meet them. (Doctoral student, interview)

- I would really like it if international standards of research writing were initially introduced to us during our training. It is hard to break through and publish in journals with much stricter requirements. (Doctoral student, interview)

Some of the participants complained they hadn't developed academic writing skills during their study:

- *During our study, too little attention is paid to the development of academic writing skills, or the ability to avoid plagiarism. For the most part, it is an independent experience gained from own mistakes (Doctoral student, interview);*

- *For years, I've been taught how to carry out research, but I have got almost no knowledge on the scientific paper design (Postdoctoral researcher, interview);*

- *Young researchers should take advantage of the opportunity to take on the experiences of more experienced colleagues. At one time I really suffered from lack of necessary information (Professor, interview);*

- *Why is it so difficult for us in Ukrainian science to get rid of a phenomenon like plagiarism? Maybe it's because sometimes we don't even know that we plagiarize. Sometimes our opinion needs an authoritative confirmation. But sometimes we forget to write from ourselves. (Doctoral student, interview).*

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The interview also demonstrated that, having no adequate source of knowledge on research writing, early-career researchers practice ad-hoc approach, using any sources they can accesses:

- *Usually I just search on other researchers' papers and use them as an example. (Postdoctoral researcher, interview);*

- *I haven't ever participated [in academic writing trainings]. I've been getting knowledge I need here and there. (Doctoral student, interview).*

They also saw the source of the problem lying in poor knowledge on publishing in peer-review journals process. In some cases, they also mentioned fair as a key factor:

- *I do not have the experience of publishing [in peer-review journals]. The main obstacle is fear. Why there is no experience, because there is fear. It's scary not to fit in (Doctoral student, interview);*

- *For some reason we are afraid to be ourselves, so many thefts. And this is not because we are unable to write something, but because we simply ban ourselves (Doctoral student, interview).*

Poor knowledge breeds high tolerance to questionable practices in research, and, as a consequence, the search for easy ways:

- *It is extremely expensive to publish in journals listed in major databases. The only way for me to get published, is to work with agents. (Postdoctoral researcher, interview);*

- *I had an experience of submitting a paper to journal through peer-review procedure. But I don't believe that this process isn't corrupted. (Postdoctoral researcher, interview);*

- *Many of my colleagues choose scientific tourism for themselves as the easiest way to obtain an internship certificate. In fact, other paths for most academics are closed. (Postdoctoral researcher, interview).*

Interesting in this regard is the perception of such a requirement for researcher, such as knowledge of English or other official languages of the European Union at a level not lower than upper intermediate level.

It will be easier for me to publish 10 articles in respected journals than studying English at a sufficient level to complete an independent exam. Certification centers will require bribe anyway. (Postdoctoral researcher, interview).

The majority of interview participants have mentioned that the only reliable source on research integrity knowledge for them stays the personality of scientific supervisor. Supervisor introduces a trainee to requirements and standards, becoming a role model:

- *Essentially, doctoral students develop copying their supervisors' habits. So it is important to understand what a correct way of behavior is. (Postdoctoral researcher, interview).*

- *I was lucky because I've got great scientific supervisor. She provided me with access to literature, shared her own materials. But if we talk about the system itself, without vise scientific supervisor, I would be deprived of these resources. (Doctoral student, interview).*

- *Personal qualities and talents are important, but the support of a scientific supervisor is decisive. (Doctoral student, interview).*

Talking about seminars and courses on academic writing and publishing, participants mostly consider them as community-building initiatives:

- *When we are getting together, we form a general behavior of the community. We begin to share values. (Postdoctoral researcher, interview)*

In this context, the concept of 'openness' was mentioned for several times:

- *We suffer from lack of openness. We always count down a lot of steps in advance, predicting what may or may not happen. We try to take into account all the risks. We are closed-minded people. (Postdoctoral researcher, interview);*

- *It is necessary to show, on your own example, what situations may arise. We do not share information. We achieve something and believe: if I have gone this way, so let others go, getting hard knocks. We need to share as much as we can, to help others avoid our own mistakes. (Postdoctoral researcher, interview).*

The key reason for participation is not to be informed about various aspects of research conducting and publishing, but to find a space for discussing the most disturbing issues and sharing best practices:

- *These events are useful. We start thinking. Usually, we retreat into ourselves. And when you come to such events, you begin to develop all-round and reflect on things that you have not paid so much attention to. You begin to filter yourself through the prism of the information you receive. It means to feel who you really are. (Postdoctoral researcher, interview).*

The attitude of many informants was that they have a deep need for quality training both on integrity, and academic writing and publishing. With no/poor professional development opportunities within institutions researchers look for various external recourses: seminar and courses provided by educational agencies outside the institution; online courses; share practice with colleagues (sometimes questionable). Still, they are more interested in learning from personal experience of people that are in the same boat.

4.2.   Improving Research Integrity Workshops Content

The findings of the study proved the need for development effective tools to promote research integrity at the Ukrainian educational institutions. The role of education interventions is not only and not so much about familiarity with the principles of integrity. The key point here is to convince the scientific cohort of the greater effectiveness of responsible conduct of research. Researchers often try to justify their non-honest behavior by pressure to publish, luck of financing etc. Therefore, the training work must offer adequate answers to each of these problems, as it is shown in Table 1.

Table 1: Summary of training content*

Problem	Workshop content
Lack of financing	Proposal writing skills development
Low awareness of the consequences of research misconduct, high tolerance for questionable practices	Case-study approach, demonstrating examples of research misconduct and questionable practices, and discussing reputation risks or other consequences for further career advancement
Isolation, lack of collaboration skills	Team-building activities, sharing best practices
Strong belief that there will always be those who bribe, fabricate, and plagiarize	Case-study approach, demonstrating the tools for identifying plagiarism and fabrication in research
Replication of own research results	Discussion on the essence of self-plagiarism
Deep fear to publish in peer-review journals	Role-playing sessions introducing to peer-review process, with a goal to familiarize researchers with peer-assessment process
Lack of knowledge on academic mobility opportunities	Training sessions on application writing, and searching for internship programs

*Source: authors (2019)

Questioning the effectiveness of research integrity education, some researchers emphasize the role of the strategies that may be chosen (ANDERSON, 2007). Simulations, case analyses, role-playing and other active and interactive strategies are recognized as more effective in promoting integrity in research. Sharing personal experience in group and

interaction with people may be more effective than dry didactics. At the same time, instruction materials have to be continuously updated and grounded in the reality of research conducting and presenting, including questionable practices. Socialization in research practices adherence to the highest standards of research integrity.

5. CONCLUSIONS AND RECOMMENDATIONS

In fact, developing the content of integrity interventions for early-career researchers, we risk touching just a tip of the iceberg. The problem of research integrity is hidden much deeper. It starts with cheating during exams, plagiarizing in student papers and course work.

The practice of plagiarizing starts at school, when standard assignments and low control provoke students not to spend their time completing their tasks themselves. It would be naïve to expect students who studied in academia with high tolerance to cheating on exams, plagiarized assignments and bribery to understand the concept of academic integrity later on. To create community of integrity, we have to provoke a change of values within this community. This generation of young researchers grew up in academic society with high tolerance to misconduct and questionable practices. This generation has also witnessed a sharp decline in the prestige of scientific work, and, consequently, the quality of scientific research. But it depends on this generation whether the Ukrainian science can escape from a deep crisis.

Some gaps may be filled by introducing researchers to best practices of research work. It is also important to give them proper training on research writing and proposing. At the same time, they need to listen to people that have experience in different aspects of research activity. Those who have already published in peer-review journals, those who have already participated in international projects and can show the benefits of such cooperation. It is important to find such role-models inside the community. To introduce them to recourses on research integrity will not be enough. Within community without clear understanding of what is wrong and what is right information itself will never become an instrument for shaping values.

So, the goal of integrity trainings is not only to introduce researchers to integrity knowledge, but also to engage them in discussion about responsibility in science. That is why the role of education in ensuring research integrity in the conditions of Ukrainian educational institutions is not only so much to familiarize oneself with the principles of integrity, but to convince the scientific cohort of the greater effectiveness of such an approach. Integrity interventions may be difficult to implement in a community that has already developed high tolerance to misconduct practices.

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Integrity values and ethical behavior is barely possible to teach neither to students, nor to academic stuff. But the community may provide the researcher with opportunities for developing skills that are essential for responsible conduct of research. It may not directly influence behavior of faculties and doctoral students. Though, it would be a strong sign of promotion integrity in academia. It also engages researchers in discussion about academic integrity and responsibility in science.

Research findings may help to identify key factors that may influence the effectiveness of research integrity trainings. It will explain possible solutions and improvements to the model that we believe will make it more effective.

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