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Preparation for the labour market: Strategies to enhance graduate experience and workplace effectiveness

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Tuning Journal for Higher Education (TJHE), Tuning Journal in short, is an international peer-reviewed journal publishing in English original research studies and reviews in all aspects of competence-based, student-centred, and outcome-oriented education reforms at university level across the globe. It is a joint initiative of the University of Deusto (Spain) and the University of Groningen (The Netherlands) that is run by the Tuning International Academy (http://tuningacademy.org/): an international meeting point for fostering innovative teaching, learning, and research in higher education.

The main goal of the Journal is to promote quality research into the 'Tuning Methodology' for designing, implementing, and assessing context-sensitive degree programmes and to subject the tools developed during Tuning projects and other educational projects to full academic scrutiny and debate among students, teachers, policy makers, administrators, and academics across societies, cultures, professions, and academic disciplines. To this end, the Journal invites applications for thematic issues, conference proceedings or monographs from all stakeholders. Guidelines for the preparation and submission of manuscripts are appended to this Issue and available at the web of the Journal: http://www.tuningjournal.org/

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Tuning Journal for Higher Education (TJHE)

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Preparation for the labour market: Strategies to enhance graduate experience and workplace effectiveness

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Editorial

Editorial

Mary Gobbi
Editor

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When the papers forming this edition of the journal were first submitted, the world was a different place. I write this introduction cheered by the beauty of an English Spring Garden in front of me. Then I notice the refuse bin waiting for the 'essential workers' to come today and collect the contents. The road is silent, I hear a distant cuckoo, the daffodils need attention as they are past their prime and I wonder how many I will 'tie up' today (another newly acquired skill in the absence of the gardener). With all our metaphors of 'battle and war' with the coronavirus, how apt are Tolstoy's words in War and Peace that 'the two most powerful warriors are patience and time'. Patience to survive 'lock down', time to find a vaccine, being patient in the shopping queue (yet plenty of time to wait – unless you are a key worker). At times like this, academics, employers, educators, students and leaders all have key roles to play in the collective and collaborative actions required for the common good. The battle is against the epidemiological clock of COVID 19- how many lives can be saved? How can we protect the weak and vulnerable? Can we 'flatten' the curve? Can we find, make and marshal resources and time (human and material) to 'beat the clock' of COVID 19? Consumed by the fire of necessity – the mother of invention – the human qualities, competences and skills which enable us to invent, re-engineer, re- purpose, adapt, change, find solutions and overcome barriers to save lives are very much alive and well. So too are the many acts of kindness, compassion, heroism, perseverance and endurance experienced and witnessed every day in this current crisis.

Some of our readers may be unaware that May 12th is International Nurses Day. This year it marks 200 years since the birth of Florence Nightingale – statistician, public health campaigner and creator of modern nursing. Last year, 2020 was designated by the World Health Organization and the International Council of Nurses as the 'Year of the Nurse and Midwife'. Although we were due to have had many global celebrations and events in May, perhaps the presence of the pandemic shows us what really

matters in life. We should never forget, or devalue, the human qualities, attributes, skills and competences of which we are all capable.

> *Live life when you have it. Life is a splendid gift-there is nothing small about it* (Florence Nightingale).

For those whose time has been cut short by the coronavirus, we dedicate this edition of the Journal. To our readers who have lost loved ones, we offer our deepest condolences, thoughts and, for those of faith, our prayers.

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Introduction

Introduction

Mary Gobbi
Editor

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This edition of the Journal shows how different strategies – whether at the macro or micro level – are employed by Higher Education Institutions to address the 'soft' or 'employment' skills and experiences that prepare (post) graduates entering the labour market. While it is expected that graduates have acquired the necessary subject specific and generic competences associated with their field of study, these papers discuss how it is increasingly important that graduates can make positive transitions into the different dimensions of the employment market: be it at local or global level. In their paper, '*Analysis of curriculum processes for the development of competencies in engineering education',* Graffigna, Ghilardi, and Dávila aptly note that 'this means linking academic life with the social context and workplace'. The concept of 'workplace' is itself of interest in so far as we sometimes neglect to apply the concept to the academy itself. Is this because it is 'politically incorrect' to view the academy *as a workplace?* Does this 'demean' an ideological worldview of the academy as the 'ivory tower' of an intellectual elite? However, when we consider entry into the labour market of the university itself, we are then challenged to question the extent to which our own programmes prepare the post-graduate for all dimensions of future academy life: researcher, educator, administrator, or entrepreneur. Edinova alludes to this when she debates the three-fold purpose of a reformed PhD programme with a history of poor completion rates in '*The characteristics of PhD programs at Saint-Petersburg State University (SPSU)'*.

Typically workplace transition and preparedness for employment is viewed from the perspective of the young adult as typified by the work of Moreno, Esteban, and Barranco: '*Young people's uncertainty about the future: education system, training and transition to employment in Spain'*. Using a case study of one city, in an area of high unemployment for 16-24-year olds, the authors explored the perceptions and experiences of these young adults, relevant stakeholders and civic actors in the local environment. The study revealed dissatisfaction amongst all participants with elements of the current strategies that prepared the young people for a challenging labour market. Interesting differences were exposed related to domestic

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circumstances and the differential influences of maternal and paternal educational backgrounds, as well as the relative autonomy of young people with respect to their economic and living arrangements. Here we see that a failure to address these socio-economic contextual effects means that the efficacy of the training programme is itself diminished. A key learning point from this paper is the necessary engagement of all local actors – be they civic, private, public, or social stakeholders – in the development of meaningful strategic policies to address areas of inequality, enhance labour market entry and provide avenues for mobility. The role of the University here is crucial as both research institute to analyse the problem and propose solutions, and as a responsible educator of local citizens.

National level Higher Education reforms, and their impacts at institutional level, form the basis of three papers. In each case (Argentina, Russia, and Vietnam) the authors debate various initiatives whose aim is to improve generic and subject specific competences that have related socio-political and employability goals. These three case studies span the realities of programme development and competence for all undergraduates in a university (Vietnam), professional accreditation (Argentina) and doctoral programmes (Russia). As we shall see in the papers, a common theme between these studies is the importance of structural communication channels and networks between the relevant participating actors.

From Argentina, Graffigna, Ghilardi, and Dávila outline their in-depth mixed methods evaluative case study that analysed the process whereby a university managed and experienced a curricula reform process. This was driven by the implementation of a revised national accreditation framework process within seven engineering disciplines and programmes. The authors argue well the different ways through which the educational actors needed to respond, on an individual personal level, through relational practices in aligning seven different programmes and at a macro level with respect to policy and subject discipline requirements. Data included documents, regulations, surveys, participant observations and cultural situational analysis. What is striking in this paper is the structured, thoughtful methodological approach to data gathering and analysis. The process includes a step by step approach that other researchers may find helpful when faced with similar projects. For example, *Table (1) Institutional development proposal for adaptation to second generation standards*. Curricula process analysis revealed four categories of courses with respect to the extent they were chosen by the professors as relating to their own course. Central courses were nominated by 40% professors, peripheral comprised 20-40%, atomized less than 20% and isolated courses were not selected by anyone. Similar

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strategies were used to identify which generic competences were central to each educational programme. Clearly, it is too early to evaluate the impact of these reforms on graduate attributes, competences, and preparation for the workplace. However, what this study demonstrates is the complexity of significant reform within an institutional setting. In particular, the modes of communication engagement had varying degrees of success. It also reminds us that the impact phase from which change can be evaluated is several years in the case of professional programmes like engineering.

Edinova's paper also revealed the critical importance of communication and co-ordination channels between the various stake-holding groups when national goals are translated at institutional level. The impact upon institution, programme and student is critically debated in **'***The characteristics of PhD programs at Saint-Petersburg State University (SPSU)'*. In this case study, the national economic goals to increase Russia's competitiveness, and consequently stimulate its knowledge economy, are realised in policy initiatives to modernise the curricula, improve the quality of higher education, and better prepare young people for the continued demands for innovation and societal change. In this reform, drivers from the state included the necessity to develop generic and subject competencies for the PhD studies that addressed both the subject specific competences and 'soft' skills required for the wider labour market that employs, in this case, post-doctoral political science graduates. The focus of the study was the generic competences. Here, the labour market includes the University academies as well as other sectors where graduates and researchers in this discipline are historically and currently employed. The empirical work comprised documentary analysis of key policy drives and surveys with an extensive range of national stakeholders including subject experts, policy makers, employment, and educational agencies. Within the institution, academics, graduates and students were engaged. This study reveals how the completion rates and motivations of students changed because their new model "Researcher. Teacher-Researcher" addressed the different facets of working life as a post-doctoral graduate. Core competences that were identified included the development of systematic and critical thinking, project management, and cooperation skills.

In Mai's Vietnamese example, the backdrop was a policy transition from a centrally planned economy to a more market orientated system**:** *The case of graduates of Vietnam National University, (VNU) Hanoi.* As a recent participant in the Tuning Asia South East (TA-SE), Mai was able to augment the Tuning methodology to elicit stakeholder perceptions of the general competences, employability, and transferable skills of the 2018 graduating cohort at VNU. These findings were then compared with those of the TA-SE

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project. This extensive project gleaned significant information using semi-structured interviews with current students, alumni, and employers. For the latter, useful insights were gleaned as they often reported having insufficient time to participate in surveys. Interestingly, both students and alumni expressed concern with "showing initiative", "planning", and "organising". It was suggested that this was because their university course had not developed these skills. Overall, results were like other studies where employers, alumni, and students evaluated the importance of some general competences more highly than the perception of graduate achievement. Points of learning in this study were that (1) generic competence development should commence earlier in student curricula; and (2) there should be a greater focus in the latter stages of the curriculum when subject content took priority.

Finally, operating at the micro-level within the professional classroom is Mubayrik's small scale study: '*Investigating the effect of clicker use on problem-solving among adult learners in dental classrooms: A cross-sectional survey'*. Clickers are a form of audience/classroom response system enabling immediate feedback between the organiser and the participants, in this case instructor and dental students. The aim of this control trial, based in Saudi Arabia, was to enhance their critical thinking and problem-solving skills to prepare them for decision making in their subsequent dental practice. Literature review and study findings report that 'clickers' enable immediate anonymous feedback without threat to public review. Mubayrik found that the classroom response system (clickers) helped to improve problem-solving, knowledge application and cognitive skills within the higher levels of Bloom's taxonomy. There was also evidence that students improved their confidence in self-assessment and presenting professional arguments: critical attributes to develop to prepare students for their subsequent professional dental practice and the necessity for lifelong learning. As a recommendation for further studies, Mubayrik proposed that a qualitative dimension to the study may garner more detail on student perspectives and the impact of the clickers on learners' experience.

As a collection of papers from different countries, disciplines, and level of academic or professional achievement, common themes are evident. First, it is critical that there is robust engagement with all relevant actors/stakeholders/partners in the development not only of the academic subject specific competences, but, more crucially, the generic competences *as they apply* to the particular labour market settings that typical graduates enter. Second, it is evident that a diverse range of structured communication modalities are necessary, individualised to specific stakeholder groups.

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Third, in depth mixed method evaluative case studies help illuminate the process and outcomes of substantial reforms generating learning points for all stakeholders – whether at the micro (individual teaching strategies) or macro (organisational and policy) level. Finally, each paper points out, albeit in different ways, that the development of appropriate employment-related skills requires significant contextual understanding of the labour market itself, related socio-economic political factors and other 'soft' influences which impact upon the motivation and learning journey of the graduate. Thus, preparing students to acquire relevant employability skills remains a challenge, demanding effective communication and negotiating skills from the academic staff themselves. The studies also reveal the institutional resources required to enable staff to fulfil their role as curricula developers equipped to deliver novel educational strategies informed by stakeholder engagement.

Looking forward to the future, we are all aware that the Covid-19 pandemic has already had a major impact upon higher education. In some cases, it has triggered or accelerated reforms, for all it has led to change and provoked a range of responses to the management of institutions, staff, students, actors and stakeholders. It would be timely therefore for us to reflect, discern and hypothesise upon the extent to which higher education is equipped to address the short, medium, and longer-term consequences of the pandemic. In particular, the roles and responsibilities of higher education towards the 'common good' of contemporary and future society are worthy of significant attention. We intend that future editions of the Journal will seek to address some of these thorny issues, dilemmas and challenges that span our diverse countries, institutions, disciplines, economies and cultures. Please consider whether you can make a contribution to this dialogue.

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Articles

Analysis of curriculum processes for the development of competencies in engineering education

Ana María Graffigna Vaggione, Lucía Mabel Ghilardi, and María Amelin Dávila Zarracán*

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Abstract: This work presents the advances being made on a research project addressing curriculum processes for the development of competencies at the San Juan National University's Faculty of Engineering (Argentina) in the framework of institutional policies that seek to make its programs of study appropriate for the second generation of accreditation standards. This is an exploratory, descriptive and interpretative study that is currently in the analytic phase, during which time we have carried out a characterization of the study plans currently in force for seven engineering programs in place at the university. In this sense, we describe both the institutional transformation related to the creation of accreditation standards and the perspectives of institutional actors as regards the curriculum design of the San Juan National University Faculty of Engineering's programs, analyzing the institutional dynamic that emerges from said process.

Keywords: Curriculum; competencies; engineering; higher education; study plan.

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I. **Introduction**

In the 1990s, interest in thinking about Curricula based on Competencies emerged in both national and international circles. This challenge is presented at all educational levels and implies analyzing the proposal, unraveling the conceptions of its different meanings and critically valuing its contributions, limitations and suppositions. The implementation of this curricular modality entails a transition from a model centered upon teaching to a model centered upon student learning, allowing students to become aware of knowledge, procedures and values for problem-solving through metacognitive capacities that permit them to reflect consciously on, plan, supervise, regulate and evaluate strategies involved in learning. Likewise, it implies know-how, being able to put into practice cognitive resources with flexibility in interaction with the subject, with the intervention of the moral conscious, in the sense that it supposes reflection on the social and ethical consequences of one's own actions.

In the world of engineering instruction, the Ibero-American Association of Engineering Education (ASIBEI), created in 1997 in response to the need to strengthen engineering both globally and internationally, has as its main objective "to promote the exchange of experiences between universities and the development of engineering education in each country, as well as to lay the groundwork on specific topics in order to establish strategies for improvement". In 2013, representatives from engineering institutions around Ibero-America gathered for ASIBEI's General Assembly in Valparaiso, Chile and agreed to propose, as common themes, competencies for graduation in order to facilitate regional integration and academic exchange.

There is consensus insomuch as all engineers must not only know, but also possess know-how. This know-how does not come from mere acquisition of knowledge but rather is the result of putting into practice a complex structure of knowledge, abilities, skills, etc. that should be recognized expressly in the learning process and as such the pedagogical proposal should include activities that allow for it development. Working with competencies, or intentionally integrating competencies, implies a framework that facilitates the well-adapted and efficient selection and teaching of contents.[1]

In Argentina, universities are responsible for awarding undergraduate degrees, while the National Ministry of Education is responsible for

[1] Roberto Giordano-Lerena et al., *Perfil del ingeniero Iberoamericano, formación de profesores y desarrollo tecnológico e innovación* (Bogotá: ASIBEI, 2016), 17.

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publicly recognizing and validating them at the national level. The Law of Higher Education (LES) establishes in article 43 that those degrees whose practice affects public interest must be accredited by the National Commission of University Evaluation and Accreditation (CONEAU). This accreditation implies periodic assessments of study plans and their development and evolution in line with previously agreed upon standards. These standards are established by academic commissions for each degree, councils of deans from both public and private universities, the National Interuniversity Council (CIN) and the corresponding CONEAU technical teams.

In October 2018, almost two decades after the first call for accreditation for Engineering programs, and based on evaluative reflection of the processes already carried out, the Federal Council of Engineering Deans (CONFEDI) presented a second generation of accreditation standards for undergraduate programs. This second generation contains a description of the referential framework and provides a set of common curricular conditions for engineering programs, including a graduate profile, general competencies for graduation, curricular structure and both minimum and general criteria. Subsequently, reserve activities, specific competencies and knowledge descriptors are indicated for 25 Engineering degrees (complete programs).[2]

II. **Theoretical framework**

In order to address the implementation of competencies in Higher Education, it is necessary to review curriculum design from its formulation itself, with the definition of graduation profiles and, more precisely, the inner workings of each course with their corresponding objectives, contents, modalities of instruction and systems of evaluation. Creating a study plan oriented towards the acquisition of graduation competencies challenges academic institutions to consider both new strategies for the selection and hierarchical organization of contents and new teaching proposals which focus classroom practice on student-centered learning. In addition, institutions are challenged to come up with strategies for the articulation and integration of areas or groupings of courses within each study plan.

[2] CONFEDI, *Propuesta de Estándares de Segunda Generación para la acreditación de carreras de Ingeniería en la República Argentina "Libro Rojo De Confedi"* (UFASTA Ediciones, 2018), 25-50.

This proposal means that curriculum is the tool for communicating to students the educational offerings available to them, providing a specific version of the professional profile legitimized by the institutional culture, in conjunction with the formal requirements of the undergraduate education.

Besides the learning of specific concepts, the term competency implies the acquisition of values and abilities necessary to be able to practice responsibly in different professional situations. This means linking academic life with the social context and workplace.

Tobón defines competencies as "integral actions of people to activities and context problems with continuous improvement, ethics and suitability, as they articulate knowledges (know to be, know to coexist, know to know, and know to do) to handling external context situations, assuming the changes and uncertainty with autonomy and creativity".[3]

Professional competencies, as taken from the contributions of Perrenoud[4]and Le Boterf[5] are integrated capacities connected to both theoretical and empirical knowledge, contextualized in the professional world, that integrate ethics and values. The Ibero-American Association of Engineering Education (ASIBEI) defines them as "… the capacity to effectively link a set of schemes (mental structures) and values, allowing for the mobilization (making available) of knowledge, in a certain context and with the objective of resolving professional situations".[6]

According to this proposal, in the world of university education, competencies may be either general or specific. General competencies are those which are necessary in order to ensure graduate profiles and which are common to all programs of study. Specific competencies are those that are reserved only for compliance with a specific degree program at an academic institution. The development of both (general and specific) can be carried out in the context of curricular activities or in the workplace, in extracurricular activities or as citizen action.

Ten general competencies are proposed, divided into two subgroups. The first is the set of technological general competencies, while the second includes the social, political and attitudinal general competencies.

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[3] SergioTobón,*Integral Formation and Competencies Complex thinking, curriculum, teaching and assessment* (Lake Mary USA: Kresearch, 2016), 44.

[4] Philippe Perrenoud, *Diez nuevas competencias para enseñar* (Barcelona: Graó, 2004), 7-15.

[5] Guy Le Boterf, *Ingeniería de las competencias* (Barcelona: Ediciones Gestión S.A., 2001).

[6] Giordano-Lerena, *Perfil del ingeniero Iberoamericano,* 22.

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- Technological competencies

1. Identify, formulate and resolve engineering problems.
2. Ideate, design and develop engineering projects.
3. Arrange, plan, execute and control engineering projects.
4. Effectively utilize application techniques and tools in engineering.
5. Contribute to the generation of technological developments and/or technological innovations.

- Social, political and attitudinal competencies

6. Perform effectively as part of a team.
7. Communicate effectively.
8. Act ethically, with professional responsibility and social commitment, considering the economic, social and environmental impact of one's activity in the local and global context.
9. Learn continuously and autonomously.
10. Act with entrepreneurial spirit.

The set of common curricular conditions for all engineering degree programs also requires a description of the curricular structure for study plans. These plans must be organized in accordance with the following areas: Basic Engineering Sciences, Basic Technologies, Applied Technologies and Complementary Sciences and Technologies. Basic Engineering Sciences involve the conceptual instruction that will form the base of more specific education, and address the competencies and knowledge descriptors necessary for initial compliance with study plan requirements. Basic Technologies include the scientific and technological competencies and knowledge descriptors of engineering phenomena which, based on the fundamental principles of the exact and natural sciences, are modeled for their management and use. Applied Technologies imply linking the previously mentioned areas in the design, calculation and projection of systems, components, processes or products and involve the competencies and knowledge descriptors of engineering design. Complementary Sciences and Technologies link Engineering practice with the social, historical, environmental and economic context in which it is inserted, in order to promote sustainable development.

III. **Methodology**

The structural logic of this research project is mixed, quali-quantitative, and is oriented towards the development of a comprehensive study of the topic.[7] It will involve intensive and in-depth analysis of several aspects of the same phenomenon and is part of the interpretive research design paradigm since its purpose is to describe and understand the curriculum design process by competencies in the Faculty of Engineering of the San Juan National University. A process of "intentional and systematic inquiry is proposed, aimed at gathering information to develop knowledge and explanations that allow us to understand, explain and, finally, transform the educational context".[8]

The study's reach is exploratory as it is aimed at examining and obtaining information in a particular context. It is descriptive because it deals with characterizing specific situations in which the study phenomenon intervenes; and it is interpretive in that it links the results of the analysis of the different categories in order to understand the object. The setting selected is the Faculty of Engineering, within a historical and social context which currently is challenging it to develop a new model of curricular design. This need to carry out curricular revision disrupts current reality and mobilizes educational actors to get involved in the transformations, personally (in terms of how I see and carry out my practice), relationally (in terms of teaching teams, transversality of contents with courses preceding and following mine, relationships with authorities and with students, etc.) and with the macro context (in terms of educational policy and the state of the art of each scientific discipline).

Data arise from the systematization and analysis of curricular documents, minutes of academic commissions and meetings of the directive council; institutional regulations; curricula and surveys answered by teachers and students. Information was also obtained from the participant observation, the ethnographic interview and the analysis of documents because they constitute the best way to capture idiosyncratic and situational aspects in the context under investigation.

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[7] Gloria Pérez Serrano, *Investigación cualitativa. Métodos y Técnicas* (Buenos Aires: Docencia, 2003).

[8] Pedro Gregorio Enriquez, *El docente-investigador. Un mapa para explorar un territorio complejo* (San Luis: Laboratorio de Alternativas Educativas, 2007).

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IV. **Institutional initiatives for the adaptation to standards**

In its presentation of second generation standards for the accreditation of engineering programs, CONFEDI formalized the incorporation of a student-centered learning model oriented towards developing graduation competencies for Argentine engineers. It established both general and specific competencies for all of the Engineering degree programs in the country. It also proposed a training program for the teaching of engineering which takes up this referential framework and opened a call to educate institutional actors as mentors for all of the Faculties in the country. These mentors would accompany the processes of design and implementation of the curricular and institutional transformations necessary for adaptation to the new standards. In response to this call, the Faculty of Engineering at the San Juan National University participates with the integration of part of the teaching team from the Technical Educational University Center (CUTE) as educational agents in the program, with the participation of its Academic Secretary, a Department Chair, a Degree Coordinator and a CUTE professor.

IV.1. *Description of actions carried out*

The professional competencies development process related to the graduation profile was carried out in meetings with different institutional members.

In November 2017, CUTE, with Faculty authorities, brought together department chairs, degree directors, professors and students for the seminar "Challenges to Education through Competencies in Engineering". This seminar had as its objective to promote reflection on the current challenges facing engineering education in terms of teaching practices.

The training proposal was structured with a classroom-workshop methodology, that is, with the collective work of its participants, in order to replicate the teaching logic expected of professors.

During 2018, members of the CUTE team participated in meetings of the Teaching Advisory Council (CADE). Department chairs were asked to carry out a survey gathering the perspectives of their professors, students and alumni as regards the functioning of the current study plan in order to become aware of teaching dynamics currently being used and to make decisions for future modifications. As a result of these meetings, three instances of action were agreed upon and are presented in Table 1.

Table 1

Institutional development proposal for adaptation to second generation standards

ACTION	DESCRIPTION	RESPONSIBLE ENTITY	SCOPE
1st Instance: sensitization and training			
Diffusion of Libro Rojo CONFEDI/ Proposal of second generation standards	• Publication on website and digital media • Cloister Meetings • Broadcast Days	Academic and Extension Secretariat	Institutional
Teacher training / updating	• Design and implementation of training proposals related to the referential frameworks of the new standards (ACE, competencies, etc.)	CUTE	Institutional
2nd instance: Diagnosis			
Curriculum analysis	• Survey of opinions regarding current training proposals (teachers, students, graduates) • Comparison of curricula with the standards proposal. Absence Identification, reiterations, etc. • Review of contents, time loads, structure, etc. • Evaluation of training experiences and content that promote skills for graduation.	Department Heads Program Coordination	Department Program
Identification of resulting problems	• Regulatory Analysis • Evaluation of operational and functional conditions (fewer hours in front of students, academic regulation, academic calendar regarding course time) • Estimation of necessary resources. Management.	Department Heads Program Coordination	Department Program

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ACTION	DESCRIPTION	RESPONSIBLE ENTITY	SCOPE
3rd instance: Implementation			
Decision making	Formalization of curricular adjustments (redesign or modification of curricula)	Department Heads Program Coordination	Department Program
Design strategies adapted to new standards.	• Content hierarchy based on descriptors • Articulation experiences • Relate curricular activities with specific skills. Articulated disaggregation competitions. • Integration of frames of reference to the design of formative and evaluation experiences. • Promote instances of articulation between programs, chairs, cycles, institutions, etc. • Promote the incorporation of new resources from teaching and evaluation (ICTs, rubrics ...)	Department Heads Program Coordination	Department Program
Development of strategies adapted to new standards.	• Implementation of the adaptation strategies designed. • Integration of frames of reference to practices of teaching and evaluation.	Department Heads Program Coordination	Department Program

Source: Our own creation.

These actions were established from November 2017 to the present day. The following have been carried out:

- The creation of a web space called "The Teaching of Engineering" which pulls together bibliographic information and advertisements regarding student-centered teaching.
- The design and administration of instruments for gathering opinions (surveys) from 11 Engineering programs (Mining Engineering, Food Engineering, Chemical Engineering, Industrial Engineering,

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Electronic Engineering, Bioengineering, Electrical Engineering, Electromechanical Engineering, Civil Engineering, Land Surveying and Mechanical Engineering) divided among three groups of actors: professors, students and alumni. The surveys were designed and administered digitally. Actors accessed the surveys in two ways, from their department chair and by means of a hyperlink available on the CUTE website.

- The design and implementation of a virtual course entitled "Current Challenges for Engineering Education". A virtual modality was chosen due to its accessibility for all of the School's faculty.

The development and implementation of this experience meant organizing the contents in modules with the following titles:

- Module I: Engineering in the present day
- Module II: New standards in Engineering Education
- Module III: Curricular Design and Competencies in Engineering
- Module IV: Reflections on learning in Engineering
- Module V: Evaluation in Engineering Education.

Each module is organized into three sections: one section of interaction that includes a discussion forum and space for questions; one work section that includes the general presentation of the course, activities, evaluations, and written and audiovisual bibliography and one section of visibility for course tutors and participants.

IV.2. *Analysis of the emerging dynamic of curricular processes*

To complete the analysis of curricular processes, professors were consulted about courses included in the study plan related to their own. This information allowed us to understand the functional relevance of courses in the study plan.

Functional or operative relevance refers to the relationships between courses established by those responsible for curricular development, going beyond those that are formally established as prerequisites in the study plan. Based on this systematization, four types of courses were identified, detailed below.

- Central courses: Courses chosen by more than 40% of professors as relating to their own

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- Peripheral courses: Courses chosen by between 20% and 39% of professors as relating to their own
- Atomized courses: Courses chosen by less than 20% of professors as relating to their own and as such make up small groups of courses (two or three) that function as an isolated nucleus
- Isolated courses: Courses not chosen by any professors

Figure 1 shows the proportion of courses of each type in study plans belonging to the degree programs participating in the survey is presented.

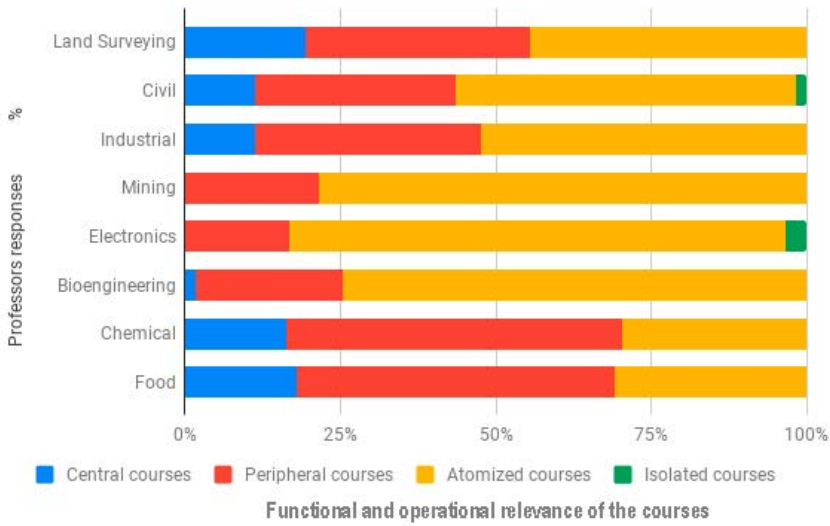

Figure 1

Proportion of courses in the study plan. Functional/operative relevance.

Source: Our own creation. Surveys administered to professors in March-July 2019

From the study carried out, it is possible to note several differences in terms of the functional structure of the different plans.

- Type 1 Programs: Those programs in which the number of central courses and peripheral courses exceeds 50% of the total courses in the study plan, such as Land Surveying, Chemical Engineering and Food Engineering.

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- Type 2 Programs: Those programs in which the number of central courses and peripheral courses is near 50% of the total courses in the study plan, while the rest are atomized courses. This is the case of Civil Engineering and Industrial Engineering.
- Type 3 Programs: Those programs in which the number of central courses and peripheral courses is near 25% of the total courses in the study plan, while the rest are atomized or isolated courses. This is the case of Mining Engineering, Electronic Engineering and Bioengineering.

If this categorization is joined together with the evolution of reenrollment in the degree programs mentioned, we can see that the type 2 educational proposals present the best rates of student retention with truly ascending curves. The curves belonging to the type 1 educational proposals are more or less stable, while the type 3 educational proposals show descending or fluctuating retention curves, as is depicted in Figure 2.

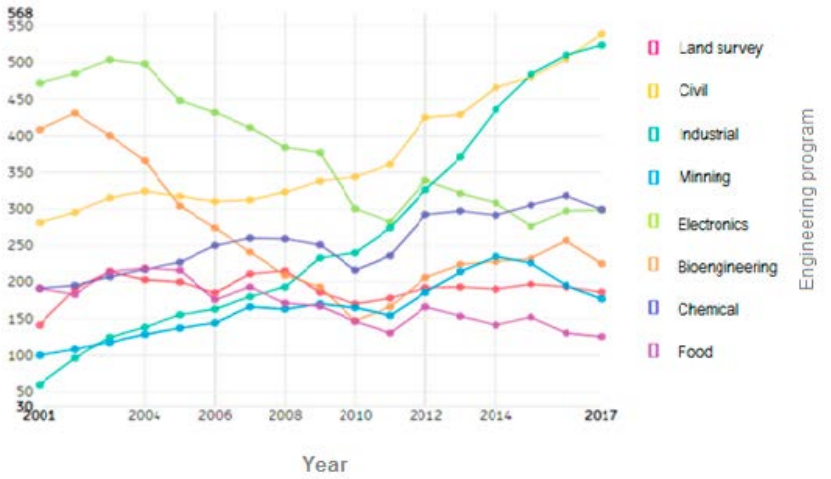

Figure 2
Evolution of reenrollment

Source: University Statistics Consultation System (SCEU) http://estadisticasuniversitarias.me.gov.ar/#/home/2

Although this data is not categorical and the rates are also associated with other variables such as the amount of new enrollees and institutional

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efforts to foster retention (tutoring, office hours, workshops for new students), there seems to exist a relationship between the functioning of the curricular structure currently in force and the evolution of enrollment. These provisional statements show evidence of the need to work on the design of study plans with educational focus identified in courses of an integrating character, around which issues related to professional education can be addressed.

This analysis contributed to the design of curricular integration workshops that were carried out for the Bioengineering and Electronic Engineering programs[9]. These workshops focused on strengthening intercourse articulation policies and activities and led to the approval of a regimen of articulation activities that promote the development of new articulation proposals.

Student opinion, still in the process of being systematized, also coincided with the need to review prerequisite requirements.

"Prerequisites should be reviewed to prevent students from losing years of study and to minimize program desertion". (Survey 19 – Students)

"Review the order and prerequisite status of certain courses, like (…)". (Survey 57 – Students)

"Only establish strong prerequisite requirements for courses with similarities or with single use of content from the previous course". (Survey 205 – Students)

The aforementioned makes obvious the need to regularly review the internal structure of the study plans and to articulate between courses, placing competencies at the center of the design and proposing concrete decisions for each cycle.

IV.3. *Approach to general competencies*

In accordance with the current framework presented by CONFEDI, general competencies are divided into Technological and Social, Political and Attitudinal. In the surveys administered, answered by 56% of the professors,[10] we collected opinions regarding the approach to general competencies in each of the degree programs analyzed. This study was carried out by degree program and also from an institutional perspective,

[9] Lucía Ghilardi et al., "Desafíos de la integración curricular en la formación de bioingenieros" (Paper presented at 4th CADI and 10th CAEDI, CONFEDI, Córdoba, September 19, 2018), https://cadi.org.ar/wp-content/uploads/2018/09/4_CADI_y_10_CAEDI_paper_272.pdf

[10] 466 professors were surveyed out of a total of 832.

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integrating the totality of professor opinion, as general competencies are shared by all the engineering degree programs.

From the data, we can see that opinion is concentrated in greater quantities in the categories of "a lot" and "quite", which indicates that these competencies are considered to be central educational concepts in teaching practices. When professors were asked to give their opinion with respect to the way in which each course contributed to the development of these competencies, the results are available in Figure 3.

For the following analysis of Figures 3 and 4, the relative difference between the extreme categories of the scale ("A Lot" and "Little") will be considered.

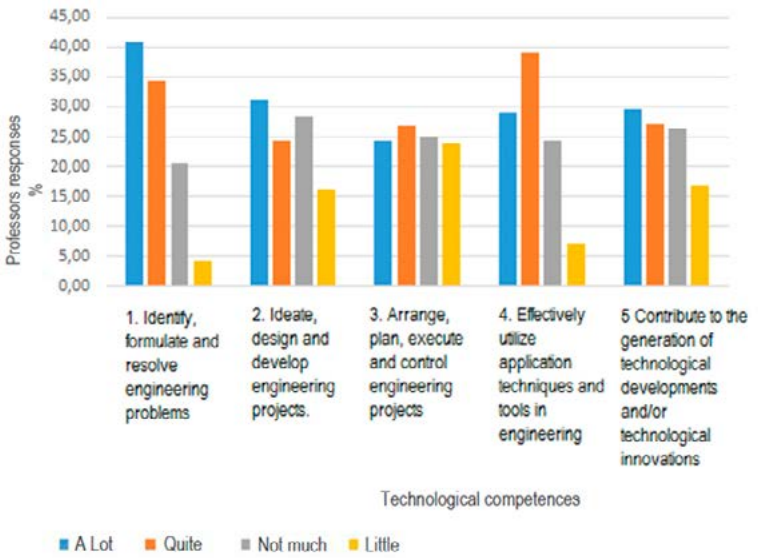

Figure 3

Approach to technological general competencies

Source: Our own creation. Surveys administered to professors in March-July 2019

As Figure 3 shows, competencies 1 (Identify, formulate and solve engineering problems) and 4 (Effectively use application techniques and tools in engineering) are those that obtain the highest rates in the "A Lot"

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category. These competencies have in common procedures that seem to be more algorithmic, related to the application of knowledge.

In contrast, competencies 2 (Ideate, design and develop engineering projects), 3 (Arrange, plan, execute and control engineering projects) and 5 (Contribute to the generation of technological developments and / or technological innovations) obtain more homogeneous distributions. It is significant for the latter, that the index obtained in the "Little" category is relatively high, since they refer to more complex skills related to creative processes such as devising or conceiving (competence 2), innovating (competence 5) and concretizing in the action, manage or execute (competence 3)

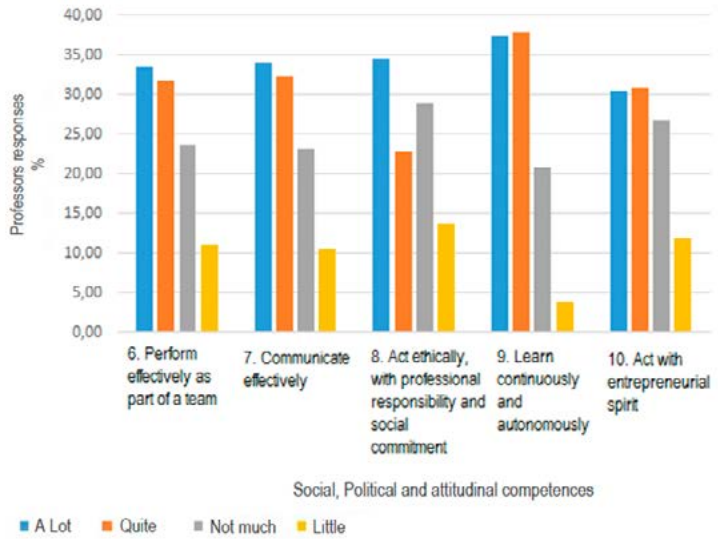

Figure 4

Approach to social, political and attitudinal general competencies

Source: Our own creation. Surveys administered to professors in March-July 2019

Regarding social, political and attitudinal competencies, it is noted that No. 9 presents more favorable development indicators, since most of the responses are located in the "A Lot" and "Quite" categories, while the "Little" is less than 5% of the responses. For the rest of the competencies of this type, the behavior is similar, since the "Little" category ranges from 10

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to 15% and the "A Lot" category ranges from 30 to 35%. Competence 10 (acting with an entrepreneurial spirit) stands out for its homogeneity in the responses of the different actors. This data is consistent with the preceding analysis regarding technological competencies.

In summary, the general competencies that are most developed relate to the resolution of prototypical problems and to the application of knowledge, while those competencies that imply more "creative" processes, including design, development and innovation, appear less frequently.

The presence and transversality of the general competencies in the design, development and evaluation of study plans and curricular activities will continue to be analyzed in the current project and will be material for future research work.

V. **Preliminary conclusions and perspectives**

From the seminar "Challenges to Education through Competencies in Engineering" as a first encounter to CONFEDI's proposal, a reflexive process was encouraged and has helped to change representations of the term "competencies" on the part of institutional actors, integrating past work experiences and initiatives that were affected by institutional policies.

The establishment of an agenda agreed upon by department chairs and degree directors allowed all institutional actors to be involved in the CONFEDI proposal, generating shared responsibilities and a distribution of tasks and enabling commitment and autonomy in the different departments, all the while respecting each one's timeline.

Communication has been an important tool for defining action, allowing agreements to be made about underlying conceptions of the term "competency" and orienting work towards action. However, this is also a dimension that must be strengthened, as communication is fundamental to the development of any project of change and growth.

With respect to the distance education proposals, we note that they were made easily available to all professors, professors who generally do not attend in-person seminars offered by the Center. The course was recently opened and despite initial expectations, registration so far has been quite scarce. Publicity has been observed to be a difficulty. Though the course has been publicized through formal channels, such as the university's website, and informal channels, such as recommendations and social networks, the reach hoped for has not been achieved. Professors who have participated in the courses highlight the opportunity to become aware of new approaches and have begun

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to implement changes in their classroom practice, as initiatives emerging from the reflection activities proposed in the different modules.

Springing from CONFEDI's presentation of general approaches to curricular design for Engineering programs and from CUTE's proposals, some degree programs have started their own path, with strategies and actions uniquely theirs and where different degrees of completion of the transformation process currently coexist. There are few characteristics that allow us to collectively identify said paths.In general terms, curricular processes oriented towards the development of competencies have required the creation of mechanisms to foster the participation of professors, students and alumni, as well as the revision (through the use of different resources) of study plans, course articulation, and the selection and hierarchical organization of content.

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The characteristics of PhD programs at Saint-Petersburg State University (SPSU): The transformation of generic competences of PhD students in Political Science

Maria Edinova*

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Abstract: The aim of this article is to explore the characteristics of the new model of PhD programs (using the case of SPSU) and to test the following hypothesis: the new model of PhD programs in Saint-Petersburg State University (SPSU) is relevant and useful for innovative development and knowledge economy formation. The hypothesis was tested according to the following tasks: 1) Analysis of the cooperation of main actors or dialog between actors in the case of the Faculty of Political Science (SPSU); 2) Estimate of changes in completion rates in the case of the Faculty of Political Science at SPSU; and 3) Exploration of the motivations of PhD students in the case of the Faculty of Political Science at SPSU. The new model of PhD programs affects the structure of communication and coordination channels between all stakeholders. It also supports the necessity of such incorporation channels for the development of educational programs. Network analysis shows that SPSU is the main actor in the decision-making processes for the development of methodological and scientific programs. Other governmental bodies, NGOs, and institutes are also included in this process. Discourse analysis and a review of questionnaire data show the first perceptions of the new model of PhD program. The

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More information about the author is available at the end of this article.

This research was carried out in 2018-2019 and it was approved by the Scientific Commission of the Department of Political Science (SPSU).

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new model is changing the completion rates by introducing a new measurement: the Diploma "Researcher. Teacher-Researcher". An overview of general competences at SPSU proved that core competences of this program correlate with soft skills and encourage the development of systematic and critical thinking, project management and cooperation skills. In addition they provide the possibility to build inter-cultural channels of self-development and to work with information.

Keywords: PhD students; third circle of education; general competences; soft skills; networks.

I. **Introduction**

Modernity means a transition to a new knowledge economy. Given this, governmental bodies, enterprises and the academic society have an increasing interest in the production of skilled specialists with doctoral degrees.

The aim of this article is to explore the characteristics of the new model of PhD (Doctor of Philosophy) programs (using the case of SPSU) and to test the following hypothesis: the new model of PhD programs in Saint-Petersburg State University (SPSU) is relevant and useful for innovative development and knowledge economy formation. A counter-hypothesis asserts that the PhD program is not relevant and useful enough. This hypothesis follows from the goals of state programs, especially "The Development of Education."[1] This document outlines the need to develop youth potential for the innovative modernization and social orientation of the country and to achieve a high level of education quality in Russia. This will increase Russia's competitiveness and consequently stimulate its knowledge economy. Moreover, the strategy of Saint-Petersburg State University highlights scientific and technological development through priority directions that are also directed at the modernization of the economy. According to the plan of Saint-Petersburg State University, by 2020 "Achieving a new level of educational, research, innovation, and expertise activities will allow SPSU, as the leader of the Russian system of higher education, to focus on solving the key tasks of social and economic development of the Russian Federation."[2] Thus, the relevance and usefulness of the new model of the PhD program will be achieved if this new model meets the main goals of the federal and

[1] "The Development of Education," The Portal of Federal Programs, accessed October 20, 2018, http://programs.gov.ru/Portal/programs/passport/02.

[2] "Saint-Petersburg State University Strategy until 2020," Saint-Petersburg State University, accessed June 20, 2018, https://spbu.ru/openuniversity/documents/programma-razvitiya-spbgu-do-2020-goda.

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university programs and contributes to the strengthening of the knowledge economy.

The aforementioned hypothesis will be tested according to the following *tasks* in the context of the objectives of the state and university programs: 1) analysis of the cooperation of main actors or dialog between actors in the case of the Faculty of Political Science (SPSU); 2) estimate of changes in completion rates in the case of the Faculty of Political Science at SPSU; and 3) exploration of motivations of PhD students in the case of the Faculty of Political Science at SPSU. The program guarantees a high level of professional qualification by cooperation with employers and other "stakeholders" for future graduates (the initiative of SPSU "Open University"). An increase in the number of graduates of higher qualification is being achieved by improving completion rates and deepening the motivation of students.

Thus, the importance of the current case-study is to obtain data from stakeholders, faculty and PhD students in order to explore the characteristics of the new PhD model. This article contains the learners' perspective, the academics' perspective and the labor market's perspective on the issues of PhD programs' modernization in the case of the Faculty of Political Science (SPSU).

II. **PhD programs in Russia: between past and future**

According to the logic of the three tasks posed in the current article, it is possible to analyze only the first directions of changes in the higher education sphere in Russia. An analysis of discussions about the cooperation of the main actors involved in the decision-making process in the sphere of PhD programs' transformation will give us the first response to these transformations from the main stakeholders. Thus, theoretical concepts represented in this section and a historical background of Russian reforms will provide a basis for the current analysis.

II.1. *PhD programs between "product" and "process"*

Nowadays the rhetorical question "what is a PhD?" is rather popular among specialists in education. During the transformation process scientists supported various themes within the framework of the PhD program: they stressed the importance of the thesis, pointed out the need for a more dynamic

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learning process, and emphasized the importance of cooperation and collaboration with the labor market with respect to doctoral studies.

In the literature review, two broad approaches to understanding the PhD programs could be noted. Some scholars defined PhD education as a *product* in terms of a traditional knowledge-based doctorate. This type of PhD program involved a specific contribution to knowledge, unique PhD students' investigation which they carry out independently. Other scholars define PhD programs as a *process* which contains more complex elements of research training.[3] This approach leads to the improvement in completion rates, acquisition of a broad range of research skills, increased employability, etc.

From this perspective, the main direction of change in Russia is related to a significant accent on skills, training and completion rates.[4] These theoretical concepts show that the transformations in Russian PhD programs are parallel, in conceptual terms, with the global scholarly community's discussions about the PhD.

II.2. *The scope of PhD reform in Russia*

Over the past few years, PhD-level education in Russia has faced considerable transformations. The new Federal Law "On Education in the Russian Federation" was adopted in 2012 and proclaimed the structural reorganization of PhD-level education in Russia. It was proposed to "integrate" PhD studies into the third level of education, which means creating new competences for PhD programs. The most important transformations for the aim and tasks of the current article are 1) PhD programs' reorientation towards competence-based third level education and 2) new rules of defense.

II.2.1. Competence-based PhD education

The reform of PhD programs in Russia discloses the potential for a new approach to competences that was used in the bachelor programs and master's programs. Such a transformation is considered to be in the same

[3] John Hockey, "The Social Science PhD: A Literature Review," *Studies in Higher Education* 16, no.3 (January 1991): 319, doi: 10.1080/03075079112331382875.

[4] Chris Park, "New Variant PhD: The Changing Nature of the Doctorate in the UK," *Journal of Higher Education Policy and Management* 27, no.2 (July 2005): 189–207, doi: 10.1080/13600800500120068.

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conceptual framework as Ann Katherine Isaacs' metaphor about the "doctoral paradox" or the "doctoral mystique". Isaacs suggested that doctoral defense is the most important aspect of PhD education for the majority of professors and students. A few researchers have underlined the importance of the educational process, but for the majority "it is not necessary to look under the carpet, so to speak, to know that a PhD is a PhD."[5] In another article it is argued that the world is producing more PhDs than ever before.[6] Consequently, the reorientation of PhD education towards advanced training presents a possible solution to the issue of "overproduction." Moreover, this transformation provides PhD holders with competences and knowledge for highly qualified work outside academia. Universities and special commissions contributed to a new direction of competences that go beyond the extremely narrow specialization towards soft skills.

There have been discussions about the crisis of high doctorate attrition rates, which are rooted in the fact that a doctoral degree does not guarantee a job for life.[7] Therefore, graduates have to develop more flexible and transferable skills that can satisfy the labor market's demands. The importance of such flexible and transferable skills is the allure of the knowledge economy for doctoral degrees, which represent advanced technical skills and ability to conduct research and promote effective participation in communities of knowledge.[8] Skilled PhD graduates contribute to society through their productive actions.[9]

The previous Russian system considered PhD programs to be a step on the path to the defense of the degree. The new system considers PhD programs to be a tool for producing highly qualified specialists for the needs of a knowledge society. Such changes at PhD-level education are correlated with the international classification of higher education and the practice of European countries. It is vitally important to point to the

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[5] Ann Katherine Isaaks, "Tuning Tools and Insights for Modern Competence-Based Third-Cycle Program," in *The European Higher Education Area*, ed. Adrian Curaj (Springer, Cham, 2015).

[6] David Cyranoski et al., "Education: The PhD Factory," *Nature* 472, no.7343 (April 2011): 276, doi: 10.1038/472276a.

[7] Christine Halse, "Is the Doctorate in Crisis?" *Nagoya Journal of Studies in Higher Education* 7 (2007): 321–337.

[8] Ruth Neumann, Kim Khim Tan, "From PhD to Initial Employment: the Doctorate in a Knowledge Economy," *Studies in Higher Education* 36, no. 5 (August 2011): 601–614, doi: 10.1080/03075079.2011.594596.

[9] Susan Mowbray, Christine Halse, "The Purpose of the PhD: Theorising the Skills Acquired by Students," *Higher Education Research & Development* 29, no. 6 (December 2010): 653–664, doi: 10.1080/07294360.2010.487199.

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Qualifications Frameworks in the European Higher Education Area. This document underlines the necessity to focus on a PhD program's competences rather than the program's structure.[10] It stresses the idea that the person holding a PhD should be able to take on a societal role dealing appropriately with issues of economic and social development. As was pointed out at the Bologna seminar in Helsinki, "Degrees of the third cycle: Competence and career of researchers," doctoral programs should not be limited to the specific subject of the dissertation research.[11] The Russian Federation ascribes QF for EHEA and actually transforms the previous PhD system's framework.

Thus, PhD programs are supposed to provide the sustainable intellectual skills necessary for a successful career. Russian scholars emphasize that the most important component of the doctoral program is the development of transferable skills, which are understood as universal competences that ensure a successful professional career in various fields of intellectual activity.[12] The new model of general competences is connected with research, teaching activities and soft skills. For instance, the association of Classical Universities of Russia and Lomonosov State University of Moscow initiated the creation of a new model for the formation of research competences of graduates in order to achieve transparency.[13]

General competences that have strong links with improvement of soft skills make PhD students competitive in the job market. What Tuning Academy calls "generic competences" are the competences that are useful in all disciplinary areas. These are often called "transversal skills" or, in the case of Saint-Petersburg State University (SPSU), "general competences."

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[10] "A Framework for Qualifications of the European Higher Education Area, Bologna Working Group Report on Qualifications Frameworks, accessed September 26, 2019, http://ecahe.eu.

[11] Valentin Ivanovich Baidenko, Nadezda Alekseevna Selezneva, "Izistorii Stanovleniya Evropejskoj Doktorskoj Stepeni" ["From the History of the Formation of a European Doctoral Degree"], *Higher education in Russia* 8/9 (2010): 99–116.

[12] Boris Ilich Bednyi, "Rol' I Struktura Obrazovatel'noj Podgotovki v Aspiranture Novogo Tipa," ["The Role and Structure of Educational Training in Graduate School of a New Type"] *Higher education in Russia* 12 (2013): 78-89, ISSN: 0869-3617.

[13] Evgeniya Vladimirovna Karavaeva, Olga Vladimirovna Vorobeva, and Viktoriya Petrovna Tyshkevich "O Razrabotke Modeli Formirovaniya Issledovatel'skih Kompetencij Vypusknikov Programm Vysshego Obrazovaniy," ["On the Development of a Model for the Formation of Research Competencies of Graduates of Higher Education Programs"] *Higher education in Russia* 27, no. 4 (2018): 33-47.

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According to the educational plan of the PhD program in the Faculty of Political Science at SPSU, students need to develop the following three main competences (general competences):

- GC-1: the ability to apply a scientific approach in their professional activity
- GC-2: the ability to work with professional texts and communicate with scientific communities as well as report on the results of scientific work in English, Russian and other languages
- GC-3: the ability to perform the duties of the researcher. This includes responsibilities for conducting scientific research, publishing scientific papers and articles, and providing individual lectures and seminars.

According to the "General Characteristics" of the educational program "Political Science (PhD program)," graduates have two types of skills: research and pedagogical. The research activities are: implementation of research and analytical projects in areas of political theory and political practice (GC-1); analysis and synthesis of research results using modern achievements of domestic and foreign political science (GC-2); preparation and holding of seminars and conferences; and lastly, preparation and editing scientific texts regarding political systems and political regimes, processes of social and political transformation, and principles and mechanisms of political governance (GC-3). The pedagogical activities are: preparation and conduction of lectures, seminars and workshops with using multimedia equipment; the development of educational programs for academic disciplines; and ultimately, the organization of independent work of students in preparation for classes (GC-3). Because of this, these competences are an influence on the development of such skills as: analytical thinking (GC-1), communication skills and writing skills (GC-2), and organizational skills (GC-3).

The new competence system should transform the PhD students' motivation. Scholars have pointed out that PhD graduates try to find jobs both in academia and business and the level of job satisfaction is quite low. Thus, gaining general competences is intended to increase motivation levels.

II.2.2. New PhD – new defenses

Along with the changes, a new system of granting degrees was introduced, and now SPSU provides degrees separately from the Higher Attestation

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Commission (PhD of SPSU). This system is quite different from the previous one, which consisted of two levels of a candidate thesis' review at the level of the Dissertation Council on a specific specialization (meetings were held once a month and consisted of members from different universities who worked in one specialization) and at the level of Higher Attestation Commission (works under the Ministry of Science and Higher Education of Russian Federation). In accordance with the additions to the law "On Amendments to Article 4 of the Federal Law" on Science and the State Scientific and Technical Policy" dissertation councils which were created earlier had to be closed before September 1, 2018 at Moscow State University (MSU) and Saint-Petersburg State University (SPSU). Thus, these universities can grant degrees without a second level of validation from the Higher Attestation Commission.

The implementation of the new model of PhD programs and continuing reforms in the third level of education is connected with the decrease of completion rates since 2007. "According to Russian government statistics, in 2007–2013, only 25–30% of PhD students had defended dissertations during the period of study or 1 year after the completion of PhD program."[14] The new PhD model represents the new qualification that awarded to the graduate after their defense of "final qualifying work" (at the end of the third year of their study) the title "Researcher. Teacher-researcher." It should be mentioned that this qualification is unified for all areas of training in accordance with the Law of the Ministry of Education and Science of Russia №1061 from 12/09/2013. In the following 6 months, PhD students have the opportunity to defend their thesis and obtain a PhD degree. According to the development program of SPSU for the period up to 2020, one of the goals of the university is to increase the completion rates of PhD programs.

II.3. *Cooperation between actors*

The management process in the scope of PhD education and governmental initiatives aimed at improving development are becoming more effective. With the aim of improving completion and motivation rates, the suggestion of introducing new public management tools to enable

[14] Natalia Maloshonok, and Evgeniy Terentev, "National Barriers to the Completion of Doctoral Programs at Russian Universities," *Higher Education* 77, no. 2 (April 21 2018): 195–211, doi: 10.1007/s10734-018-0267-9.

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successful PhD education has been pointed out by different scholars.[15] Such mechanisms as transparency over academic achievements and the lack of regulations for departments by governmental institutions lead to the broadening of the networks of the main stakeholders interested in the PhD program development.

In recent years, the task of orienting higher education to the labor market in Russia has been solved by attracting representatives of organizations and enterprises to educational and methodological commissions, scientific commissions, as well as state examination and attestation commissions. Thus, they are given the opportunity to reflect the interests of the economy in the field of specialist training. For the analysis of programs, competences and the entire educational process implemented in Saint-Petersburg State University, a significant number of expert bodies were created. Among them were educational programs councils, quality control commissions of educational process and educational and methodological commissions at each faculty of SPSU.

Thus, this part shows the main discussions about PhD programs and main directions of reforms in Russia. These reforms should be related to the effective cooperation between the main stakeholders, high completion rates, and improvement of the motivation of PhD students. This is based on the competences related to soft skills.

III. **Methodology**

Based on the above goals and tasks of the article, methods of secondary and primary data collection were applied. Statistics, the official documents of the Faculty of Political Science (SPSU) and speeches from the 2018 International Labor Forum were used as secondary data sources. The primary data come from online questionnaires for the PhD students at the Faculty of Political Science and graduates and in-depth interviews with members of the Faculty Board and the Administrative Staff, Academic Associations, governmental bodies and the HR-Association (Table 1).

[15] Peter Schneider, and Dieter Sadowski, "The Impact of New Public Management Instruments on PhD Education," *Higher Education* 59, no. 5 (July 2009): 543–565, doi: 10.1007/s10734-009-9264-3.

Table 1

Data Collection					
Tasks	Secondary Data			Primary Data	
	Statistics	Speeches	Official Documents	Questionnaires	Interviews
1. to analyze the cooperation of main actors or dialog between actors in the case of the Faculty of Political Science	-	+	+	+	+
2. to estimate changes in completion rates in the case of the Faculty of Political Science	+	-	+	+	-
3. to explore motivation of PhD students in the case of the Faculty of Political Science.	-	-	-	+	+

Table 2

Sample				
Perspective	Type of data	Group	The quantity of data in group	The period of data collection
The Learners' perspective	Questionnaires	Graduates	12	June – October 2018
		PhD students	18	
The Academics' perspective	Interviews	SPSU (E1-E6)	6	September – October 2018
		Academic associations (A1-A3)	3	
The Labor market's perspective	Speeches	Governmental bodies (G1-G2)	2	March 2018
	Interviews	HR-association (J1)	1	September – October 2018

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Thus, the learners' perspective, the academics' perspective, and the labor market's perspective were chosen for deeper analysis of the issue (Table 2). These three categories of respondents consist of PhD students and graduates (the learners' perspective) to whom online questionnaires were emailed; professors at the Faculty of Political Science (SPSU), heads of different departments, members of scientific and educational-methodological commissions at the Faculty of Political Science (SPSU), federal academic associations in Russia (the academic perspective) with whom interviews were conducted; members of the HR-association with whom the interview was conducted and members of governmental bodies (the labor market perspective) whose speeches from the International Labor Forum were coded and analyzed in the same categories as interviews. According to the suggestion that all interviews be explored as "voices" from the one concrete perspective, it was possible to transcribe and code speeches of governmental bodies in the same sets of questions and emerging categories as face-to-face interviews.

Firstly, statistical data were taken from the official portal of Russian Statistics. The lack of official statistics of completion rates in Political Science leads to the lack of information to make a full picture of how the new PhD model influences on completion rates.

Secondly, official documents were divided into three groups: protocols of educational-methodological commissions (October 2017 – September 2018), protocols of scientific commissions (October 2017 – September 2018), and protocols of defense commissions (2016, 2017 and 2018). To create a network of main actors in the decision-making process in the sphere of PhD program's modernization at the Faculty of Political Science (SPSU), three types of measures were used to identify participants involved in this process. Members of educational-methodological commission at the faculty, scientific commission at the faculty, and the examination boards for PhD defenses from 2016 to 2018 were analyzed. The tool of UCINET software was used to draw a network of the decision-making process in the sphere of the implementation of competences. The definition of the network analysis is used in the terms of Roderick Arthur William Rhodes' definition of the policy network analysis. This is because the aim of the current article is to disclose the decision-making process.[16]

Thirdly, the link to the online survey was emailed to 56 PhD students of the Faculty of Political Science (SPSU) (admitted between 2013 and 2017)

[16] Roderick Arthur William Rhodes, *Understanding Governance: Policy Networks, Governance, Reflexivity, and Accountability (*Buckingham, Philadelphia: Open University Press, 1997).

and 30 questionnaires were collected from June 2018 to October 2018. Out of them, 40% corresponded to those who have already graduated and 60% to those who were still studying. The online survey for PhD students and graduates consisted of 16 questions: hard data (the year of admission to PhD program), three closed questions and 12 questions with multiple answers. The questions were divided into five groups:

1) Questions about PhD students' motivation
2) Questions connected with potential completion rates
3) Questions about PhD students' cooperation with the members of the Faculty of Political Science (SPSU)
4) Questions about competences
5) Questions about PhD students' careers

The analysis of closed questions was based on a grounded approach. According to the founders of grounded theory,[17] this approach is appropriate for conceptualizing categories from collected data and demonstrating relations between them. Thus, opened responses were divided into core categories and then the characteristics of each category were analyzed.

Fourthly, 10 semi-structured face-to-face interviews[18] were conducted and audiotaped during the period from March 2018 to October 2018. Each interview lasted approximately 40 minutes. Consequently, six interviews were conducted with the representatives of the Faculty (E1-E6), three interviews with representatives of academic associations (governmental and non-governmental: A1-A3), and one interview with the representative of the labor market (business J-1). Thus, six interviews were conducted inside the Faculty of Political Science and four interviews were conducted outside the Faculty of Political Science.

Four clusters of questions for the "academic perspective" E1-E6 and A1-A-3 emerged during the interviews: 1) about the new PhD model in general;

[17] Barney G. Glaser, Anselm L. Strauss, *The Discovery of Grounded Theory: Strategies for Qualitative Research* (New York: Routledge, 2017), doi:10.4324/9780203793206.

[18] Interviews were conducted with the head of the Educational-Methodological Commission of the Faculty of Political Science, members of the Educational-Methodological Commission of the Faculty of Political Science, the heads of the Departments of the Faculty of Political Science, the head of Scientific Commission of the Faculty of Political Science, members of the Scientific Commission at the Faculty of Political Science, a member of the Higher Attestation Commission, a member of the Federal Educational-Methodological Association of Higher Education, the head of the Department of HR Association in Saint-Petersburg, and the vice-president of the Russian Association of Political Science.

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2) about PhD competences; 3) about cooperation with the labor market; and 4) about skills of PhD students and graduates. Three sets of questions for the "labor market perspective" J-1 and G-1-G-2 emerged during the interviews: 1) about professional standards and educational standards; 2) about educational competences and graduates' skills and labor market requirements; and 3) about cooperation channels between governmental bodies, educational organizations and the labor market.

The interviews were transcribed, coded and special emerging categories were identified. According to the four clusters of questions, respondents (E1-E6; A1-A3) tended to speak about the issue from the perspective of three categories: PhD students and graduates "knowledge," PhD students and graduates "research," and "effectiveness" of the new PhD model (Table 3). New subcategories were included in the system of analysis because of the function of the semi-structured interviews, which provide the broad data. This was useful for obtaining emerging analytical categories.

Table 3

<table>
<tr><td>Group of questions</td><td>Questions about new PhD model in general</td><td>Questions about competences in PhD education</td><td>Questions about cooperation with labor market</td><td>Questions about skills of PhD students and graduates</td></tr>
<tr><td rowspan="2">Questions</td><td>New model</td><td>Pedagogical practice</td><td>Cooperation with labor market</td><td>Soft skills</td></tr>
<tr><td rowspan="2">Strengths and weaknesses of new model</td><td>Transformation of competences</td><td rowspan="2">Usefulness of competences for the requirements of the labor market</td><td rowspan="2">Who is a PhD graduate?</td></tr>
<tr><td>Characteristics of PhD competences</td></tr>
<tr><td rowspan="3">Emphasis in answers</td><td colspan="2">Knowledge</td><td rowspan="3">Description of features and skills</td></tr>
<tr><td colspan="2">Research</td></tr>
<tr><td colspan="2">Effectiveness</td></tr>
</table>

Speeches from the Labor Forum were coded according to the logic of the interview questions (J-1). The most interesting speeches were outlined among 16 speeches of participants of the panel according to the scope of the article. Thus, two speeches of the representatives of governmental bodies

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were used (G-1-G-2). The interview (J-1) and speeches (G-1-G-2) were coded according to the categories "effectiveness" and "knowledge."

Traditional discourse analysis was used to focus on the practices of the text or rhetoric. There are very many definitions of discourse analysis. In this article the definition connected with "individuals and group interpretation of the world" are used. Continuing the suggestion of Reisman, the most important thing for this analysis was to understand the internal attitudes of speakers.[19] In discourse, research coding is made more straightforward by "sifting relevant materials from a large body of recording and transcript."[20]

IV. **Findings**

This section consists of three subsections in accordance with tasks of this article that were outlined before. Consequently, all data were distributed according to the three tasks.

IV.1. *Analysis of cooperation between main actors in the case of the Faculty of Political Science, SPSU*

There are many external actors included in the educational and educational-methodological processes at different stages at SPSU. According to the protocols of the scientific commission, educational-methodological commission, and defense commissions at the Faculty of Political Science, the level of collaboration and the strength of relationships between actors (governmental bodies, NGO, universities) was rated by the amount of contacts. According to Figure 1, the vertex is for actors (municipal authorities, city government authorities, NGOs, universities etc.); ties are for the number of cooperative meetings. Number one is Saint-Petersburg State University, while numbers 2 to 13 are other universities, governmental and non-governmental organizations.[21]

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[19] Catherine Kohler Riessman, *Narrative Analysis: Qualitative Research Methods* (Newbury Park, CA: Sage Publications, 1993).

[20] Melissa Hardy and Alan Bryman, *Handbook of Data Analysis* (London: Sage Publications Limited, 2004).

[21] 2.Legislative Assembly of Saint-Petersburg, 3.Committee on Media of the Government of Saint-Petersburg, 4.Students, 5.Russian Presidential Academy of National Economy and Public Administration, 6.Saint-Petersburg Election Commission, 7.Civil Society Development Foundation, 8.Baltic State Technical University, 9.Saint-Petersburg State Institute of Culture,

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Thus, 12 main actors are involved with the Faculty of Political Science (number 1) and take part in meetings, conversations, discussions on the main directions of the development of PhD programs and members of examination and defense commissions. The network (Figure 1) displays five dens clots, which show members of the educational-methodological commission (the red polyhedron), the scientific commission (the green polyhedron) and defense commissions from 2016 to 2018 at the Faculty of Political Science (SPSU) (orange, blue and purple polyhedrons). The most influential actors with the majority of ties with the Faculty of Political Science (SPSU) are the Saint-Petersburg Legislative Assembly (2), the Russian Presidential Academy of National Economy and the Public Administration (5), the Saint-Petersburg Election Commission (6), the Baltic State Technical University (8), the Central Naval Museum of Saint-Petersburg (11).

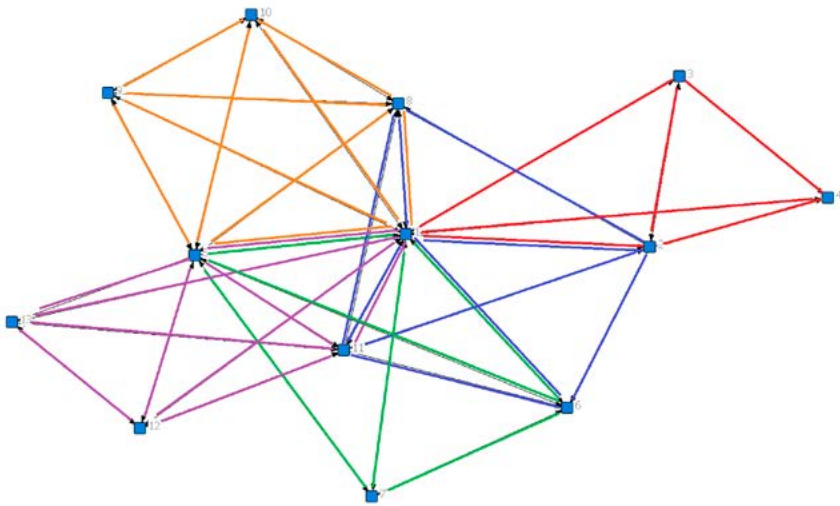

Figure 1

Main actors involved in faculty activities

According to the analysis of the category "knowledge" in interviews, it is important to outline and explain subcategories in the third cluster of

10.Sociology Institute of Russian Academy of Science, 11.Central Naval Museum of Saint-Petersburg, 12.Russian society of political scientists, and 13.Civic Chamber of the Russian Federation.

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questions about cooperation with the labor market (*overeducation* and *ignorance)* for the first task of the article. On the one hand, overproduction of PhD graduates leads to an increase in the numbers of highly qualified specialists which positively influences human capital and creative capital development. This is vital for economic growth. Respondents outlined that all "budget places" (grants for PhD education from the government) are coordinated with the labor market. On the other hand, respondents argue that PhD graduates' knowledge is not obvious to the labor market and this leads to their ignorance'. According to the analysis of the category "effectiveness" in interviews, it is vital to highlight two subcategories in the third set of questions (sustainable cooperation and lack of knowledge channels). The total number of respondents who speak about coordination between the labor market and educational organizations pointed out the necessity of sustainable cooperation on a continual basis with a huge range of potential actors. However, the lack of knowledge channels and the lack of information in the scope of PhD program's transformations leads to the misunderstanding of the role of new graduates in the labor market.

Thus, these data help to analyze the cooperation of main actors or dialog between actors in the case of the Faculty of Political Science at SPSU.

IV.2. *Assessment of the developments in completion rates of PhD programs in Russia*

According to Figure 2, the decreasing level of completion rates and the reduced number of graduates without a degree in educational organizations can be seen. This is for six years in the scope of the Political Science specialization. A decrease is observed both in absolute values and in percentage. Thus, from 2010 the percentage of PhD graduates with degrees from the total number of PhD graduates decreased more than two times (from 27% in 2010 to 7% in 2016). According to the new PhD model, 2016 was the first year of graduation.

According to the analysis of the category "research" in interviews, it is important to outline and explain subcategories in the first cluster of questions about the new PhD model in general (research *promotion* and research *decrease)* and review the subcategories in the second set of questions about competences in PhD programs (the competence-based approach *work on PhD student research* and the competence-based approach *decrease the level of individual research)*. On the one hand, the new model introduced a new completion rates measure – diploma "Researcher. Teacher-researcher"

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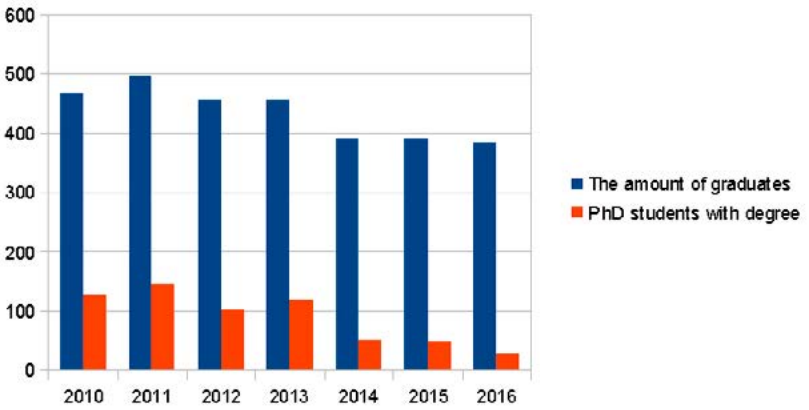

Figure 2

PhD graduates who ended the program (blue). PhD graduates with degree among total (specialization Political Science, all Russian universities).

(research promotion). A concentric approach of competences strengthens PhD students' research skills (*work on PhD student research*). Moreover, it leads to future increases in completion rates. On the other hand, respondents argue that the new model has no effect or even a negative effect on completion

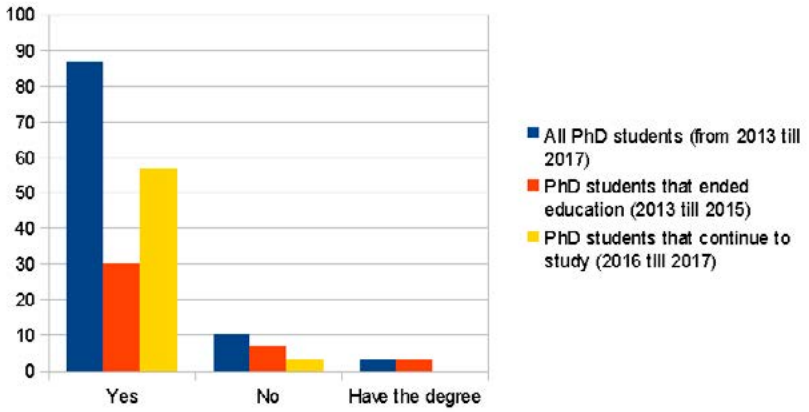

Figure 3

Distribution of survey results "do PhD students plan to defend their degree thesis?"

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rates because of the research level decrease (rooted in the necessity to complete two theses [one for the diploma and one for the degree]). Furthermore, the competence-based approach erases the individuality of PhD student research.

According to the survey, 86.7% of respondents plan to defend their dissertations for a degree. 30% of PhD graduates (admitted from 2013 to 2015) and 56.6% of PhD students (admitted from 2016 to 2017) are planning to defend their thesis out of the total number of respondents. 6.6% and 3.3% of PhD graduates and PhD students (respectively) do not want to defend their dissertations. Only 3.3% of PhD graduates end up earning the degree. At the same time, 56.7% of graduate students claim that their skills acquired during the PhD program at the Faculty of Political Science (SPSU) are important for their future career.

IV.3. *Analysis of motivation of PhD students in the case of the Faculty of Political Science, (SPSU)*

During the correlation analysis, it was outlined that 60% of graduate students believe that the presence of a degree has a positive effect on their

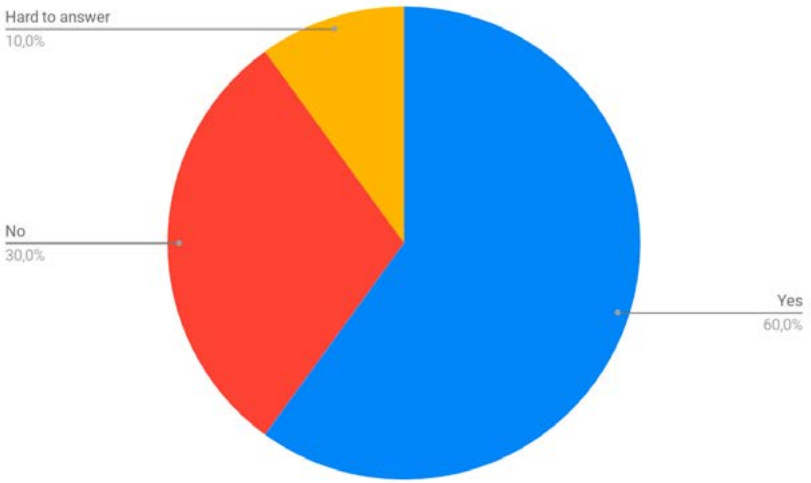

Figure 4

Distribution of survey results "Does the PhD degree and PhD experience make you more competitive in the labor market?"

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competitiveness in the labor market (Figure 4).The category "effectiveness" in interviews has shown two subcategories in the first set of questions about the new PhD model in general (the new PhD model is effective for the University; the new model is not efficient for PhD students and graduates). The category knowledge was divided into two subcategories in the second set of questions about PhD competences (importance of competences for any career and importance only for academia). The category "research" shows two subcategories in the third set of questions about cooperation with the labor market (image and ignorance). These emergent subcategories reflected the issue of PhD students' motivation in terms of the efficiency of the program for them, the importance of PhD competences for a broad variety of career choices, and the prestige of motivation. Thus, this data helps to disclose the issue of motivation of PhD students in the case of the Faculty of Political Science at SPSU.

V. **Discussion**

In this article an overview of the general competences in the new model of postgraduate programs at Saint-Petersburg State University was discussed. These competences have a greater impact on the development of general and universal skills that can be useful in any field. This differs from previous PhD programs, which could be characterized by a very strong emphasis on the preparation of independent (under the guidance of a Doctor of Science/Professor) qualification research work. In fact, the components of training, as well as the pedagogical components, were minimized in the previous PhD program.

In general, the attitudes towards new competences that provide new PhD programs have been divided. On the one hand, the interviewees (E4) optimistically evaluated the new competence model. Such a continuous educational model preserves the freshness of knowledge. Moreover, it was noted that a concentric approach to competences was implemented in SPSU. It was pointed out that in the interviews (E5) the modern model of PhD programs represents the continuation of student learning. On the other hand, postgraduate studies should be at a separate level that applies to a separate department and professors who do not participate in the work with bachelors and masters. "The student status of a graduate student is emphasized – this is a negative trait, this system is not effective in the psychological, structural, institutional and material sense. Competences based on an approach to the PhD program is not the key to success as they reflect the same disadvantages that associate a graduate student with a 1st year undergraduate student" (A-1).

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Based on the discourse analysis of in-depth interviews, three main conclusions can be made.

First of all, according to the aim of the state program, it is necessary to build sustainable cooperation channels between all stakeholders on federal, regional and university levels: the Ministry of Labor and Social Protection and Ministry of Science and Higher Education, other governmental bodies and NGOs, universities and business community, etc. These channels will help to avoid transaction costs and provide the right feedback from the labor market to the educational sphere. Thus, some interviews, both from the labor market and academia, outlined the problem of misalignment of competences in political science with professional standards. Another problem is that the representatives outside academia (J1) do not understand the new model of PhD programs and it is the first obstacle to their ability to participate actively.

Secondly, the transformation of PhD education into the third level of study leads to the increase in completion rates. The implementation of the new measure of completion – a qualification diploma for PhD students ("Researcher. Teacher-Researcher") – technically increases the completion rates of PhD educational programs. But this diploma does not influence knowledge development and does not promote the knowledge economy because of the weak criteria for obtaining it, as stated in the majority of interviews. Therefore, this system needs future modernization as it does not positively influence degree completion rates. According to the survey data, some PhD students admitted in the years 2013, 2015 and 2016 do not want to defend their degree theses. Only PhD students (100% of them) admitted in 2017 plan to do so. This is connected with the transformation of the PhD education plan for students admitted in 2017: they receive new disciplines in pedagogy, psychology, and communication. The trend for increasing the hours of pedagogical practice has more advantages according to the discourse analysis of in-depth interviews. According to the PhD students surveyed at the Faculty of Political Science, 24.1% of respondents estimated the efficiency of pedagogical practice in the context of development of key competences at 5 on a scale of 1 to 10. 20.7% estimated it to be 10 and 17% evaluated this indicator to be 1. Such diversity in the estimation of pedagogical practice outlines the issue of different levels of incorporation for the pedagogical community of the faculty. This conclusion comes from the correlation between the level of PhD students' participation in the meetings of the academic council, departments and other commissions and the level of their evaluation of the effectiveness of teaching practice for PhD students in terms of developing core competences. Consequently, the higher the level of incorporation is, the higher the interest and the higher the completion rates

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will be. Unfortunately, a problematic issue that remains is that PhD students have to engage in compensated work (100%) because of a lack of funding for their PhD. As stated in the interview (E4) "the combination of graduate students in their studies with work, because of the low level of scholarships, leads to a decrease in the level of scientific knowledge." Obviously, it leads to a reduction in completion rates.

Thirdly, according to the assumption that self-management is the core competence among the soft skills, it is important to make a correlation with the competences of PhD programs in SPSU. The sustainable promotion of high soft skills during the PhD programs increases the motivation rate of PhD students by opening broader career opportunities for students. During the discourse analysis in 4 out of the 9 in-depth interviews (interviews E1, E2, E3, E4) with the representatives of the university, the member of Higher Attestation Commission and Russian Association for Political Science, staff pointed out the importance of time management, organizational skills, self-observation, self-analysis and discipline as the competences that developed during the PhD study. Analysis of a survey of PhD students shows that 56.7% of students considered that these competences were important in their professional activities now and in the future. At the same time, only 36.7% of PhD students from the Faculty of Political Science wanted to work in universities and in the higher education system. Consequently, the competences gained from PhD programs are relevant for different professional directions.

VI. **Conclusion**

This article has analyzed the new model of PhD programs in Russia, using the case of the Faculty of Political Science at SPSU. The new model has transformed PhD education in several ways: it has incorporated labor market representatives into the process of educational program implementation, it has created new competences, it has introduced additional disciplines and hours of pedagogical practice, it has added the new diploma qualification at the end of the PhD program (before degree), and it has changed the rules of degree defenses. All these transformations were directed at achieving goals of federal programs in educational and labor market development.

The new PhD model in SPSU declares its aims in the context of knowledge economy and sustainable development of education and labor market. The new model of PhD programs affects the structure of communication and coordination channels between all stakeholders and

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supports the necessity of such incorporation channels for the development of educational programs. In the current article an overview of general competences in the new model of PhD programs at Saint-Petersburg State University has been conducted. Core competences of this program correlate with soft skills and encourage the development of systematic and critical thinking, project management and cooperation skills, and they provide the possibility to build inter-cultural channels of self-development and to work with information. This correlation stimulates broad career opportunities for graduates after they exit their PhD programs and promotes higher motivation rates because PhD students will better understand how they can present and translate their knowledge to the needs of society.

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Young people's uncertainty about the future: Education system, training, and transition to employment in Spain

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Abstract: The general context of precariousness of employment affects youth in Spain. Delving deeper into the axes that traverse this uncertainty, we present part of a cross-sectional study on the perception of young people in the city of Toledo, in which an ad hoc questionnaire was used for data collection to compare the results at the Spanish and European level. The sample includes 505 people aged between 16 and 24 years. The main findings indicate a general dissatisfaction with the training received and a lack of adaptation of the transition system to the labor market, elements that repeat themselves in the perception of different agents regarding this context. Significant differences were found regarding the perception of problems considering the education level of the parents and aspects related to the autonomy of the young people, such as living independently or living off of their own income. This represents clear similarities with young Europeans and especially in the Spanish case but presents specific difficulties for young people in regions such as Castilla-La Mancha.

Keywords: Youth unemployment; inequality; educational system; labor market.

I. Introduction

According to data released by Eurostat in 2018, almost 17 million residents of the European Union (EU) were unemployed. One of the main

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objectives of the Europe 2020 strategy is for 75% of the active population (20-64 years) to have a job by the end of the decade. In particular, the EU works to reduce the youth unemployment rate, which is double that of adults. Young people generally face an increased risk of unemployment (in February 2019, the unemployment rate of 15 to 24-year-olds was more than double that for the entire population, 16.1% versus 7.8%, respectively). For this reason, a more specific and holistic approach to fight against youth unemployment is encouraged.[1] The strategic planning policies promoted by the EU reflect a more detailed and holistic approach to this issue, with direct support for the most needy youth, structural reform to strengthen partnerships between ministries, formal education systems, professional education agencies, employment agencies, and companies, social partners and civil society organizations from all countries of the EU.[2]

The economic crisis has deepened and highlighted the difficulty of young people identifying and securing a place in the labor market, given their high sensitivity to macroeconomic evolution, demonstrated empirically in the work of many researchers before the recession.[3'4] The impact of unemployment in periods of crisis, especially affects young people. This is a reality reflected historically. This situation of special vulnerability in work spaces results in a greater probability of being unemployed, underemployed or precarious, often tripling the unemployment rates of the general population.[5] According to the United Nations Development Program[6], they would be a group with special sensitivity to macroeconomic transformations and instabilities, as could have been verified in recent years by the consequences and effects of the economic crisis and the repeated and prolonged impacts, in this group,

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[1] Eurostat Statistic Explained, https://ec.europa.eu/eurostat/statistics- explained/index.php?title=Employment_statistics/es, published in February, 2019.

[2] European Commission, "Employment and social developments in Europe" (Brussels: Directorate General for Employment, Social Affairs and Inclusion, 2013).

[3] David G. Blanchflower and Richard B. Freeman, *Youth employment and joblessness in advanced countries* (Chicago: University of Chicago Press, 2007).

[4] Juan F. Jimeno and Diego Rodriguez-Palenzuela, "Youth unemployment in the OECD: demographic shifts, labour market institutions, and macroeconomic shocks" ,Working Paper No. 155, European Central Bank,(*June* 2002), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=357960.

[5] Rubén Lasheras Ruiz and Begoña Pérez Eransus, "Jóvenes, vulnerabilidades y exclusión social: impacto de la crisis y debilidades del sistema de protección social," *Revista de Servicios Sociales,* 57 (2014): 137-157.

[6] United Nations Development Programme, "Youth Strategy 2014-2017" (2014), https://www.undp.org/content/dam/undp/library/Democratic%20Governance/Youth/UNDP_Youth-Strategy-2014-17_Web.pdf.

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despite possible recoveries. Thus, a first conclusion of studies such as those of Marelli and Marcello[7] is that the relative position of young people, compared to those in other countries in the area, is more adverse in two types of countries: countries where the majority of adverse economic conditions (both structural and cyclical), especially after the recent crisis, are reflected in high unemployment (such as Greece, Spain, Italy, etc.) and countries that, despite the generally better economic conditions, are characterized by institutional characteristics that are not particularly favorable for young people (such as Great Britain, Sweden, Belgium, Poland, etc.).

Throughout the last few decades, the dawn of postindustrial society based on knowledge has coincided with the growing complexity, difficulty and duration of the transition of young people from school to work.[8] Despite high investments in education for younger generations, in almost all European countries, young people are more exposed to vulnerable living conditions and precarious positions in the labor market and have fewer opportunities compared to their parents.[9]

The analysis of institutional, structural, social and macroeconomic factors broadens the perspective in the exploration of the main elements that are intervening in excluding young people from the labor market, understanding that this exclusion no longer has an isolated character but has become a trend that does not revert even with the implementation of different strategies.[10'11'12] The situation in Spain is particularly worrying, which in the last decade has led to an increase in difficulties for young people accessing their first job. Youth unemployment was at 33.54 points in the fourth quarter of 2018.[13] Youth development has been centered around two specific

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[7] Enrico Marelli and Signorelli Marcello, "Young people in crisis times: Comparative evidence and policies," *CESifo Forum*.18. 2 (München: ifo Institut-Leibniz-Institut für Wirtschaftsforschung an der Universität München, 2017), 19-25.

[8] Hans Dietrich, "Youth unemployment in Europe," *Theoretical considerations and empirical findings* (2012), https://library.fes.de/pdf-files/id/ipa/09227.pdf.

[9] Misbah Tanveer Choudhry et al., "Youth unemployment rate and impact of financial crises," *International journal of manpower* 33.1 (2012):76-95.

[10] Rubén Lasheras Ruiz and Begoña Pérez Eransus, "Jóvenes, vulnerabilidades y exclusión social: impacto de la crisis y debilidades del sistema de protección social," *Revista de Servicios Sociales,* 57 (2014): 137-157.

[11] Robert MacDonald, "Disconnected youth? Social exclusion, the 'underclass'& economic marginality," *Social Work & Society* 6.2 (2008): 236-248.

[12] Stefano Scarpetta et al., "Rising youth unemployment during the crisis" (2010).

[13] "INE. Instituto Nacional de Estadística", Encuesta de Población Activa (EPA), Cuarto trimestre 2019, INE, (published on February 28, 2020), https://www.ine.es/daco/daco42/daco4211/epa0419.pdf.

precepts related to training and job placement. The breakdown of these two elements in the labor market has accentuated the vulnerability of young people both in their personal and collective spheres. The current situation responds to a historic reality in Spain that is characterized by a labor market whose fabric is low-skilled labor, which favors temporary work and it is accompanied by deregulation.[14] Young people are among the groups in which the highest rates of temporary work, precarity, fragmentation and underemployment are found. [15,16,17] All of these factors have a significant impact on the autonomy and participation of young people. The high rates of youth unemployment are no longer explained by structural transformations and the divergence between the demand and supply of skills, competencies and aptitudes, as was noted in the last century.[18,19]

Despite the break in the direct relationship between training and job placement that occurred in other time periods, the specialized literature reflects that exposure to risks and the vulnerability of young people have strong relationships with their education level.[20,21,22] The level of education

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[14] Jorge Benedicto et al., "Informe juventud en España 2016," (Madrid: Instituto de la Juventud, 2017).

[15] FOESSA, Fundación, *VII Informe sobre exclusión social y desarrollo social en España (Madrid: Cáritas/Fundación FOESSA* ,2014),cap. 3, https://www.foessa2014.es/informe/uploaded/descargas/VII_INFORME.pdf.

[16] Marí Angels Cabasés i Piqué, et al., "El modelo de empleo juvenil en España (2013-2016)," *Política y Sociedad* 54, no. 3 (2017):733-755.

[17] Joan Miquel Verd Pericàs et al., "Trayectorias laborales y capital social en la población joven: elementos para analizar la precariedad laboral juvenil más allá de los grandes focos," *Anuario IET de trabajo y relaciones laborales* 3 (2016): 144-158.

[18] Kim B. Clark and Lawrence H. Summers, "The Dynamics of Youth Unemployment," in *The Youth Labour Market Problem: Its Nature, Causes, and Consequences. A National Bureau of Economics Research Conference Report*, ed. Richard B. Freeman and David A. Wise (Chicago and London: The University of Chicago Press, 1982).

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[20] Adoración Guamán Hernández, "De la estabilidad en el empleo a la precariedad laboral por la vía de la contratación temporal: la inserción de los jóvenes en el mercado de trabajo como paradigma del trabajo precario," *Anuario de la Facultad de Derecho 6* (Universidad de Alcalá: 2013): 103-136, https://ebuah.uah.es/dspace/handle/10017/20089.

[21] María Angels Cabasés i Piqué et al., "Precariedad y temporalidad, principales características del empleo juvenil en España," *Revista del Ministerio de Empleo y Seguridad Social,* 126 (2016): 31-52.

[22] Rubén Lasheras Ruiz and Begoña Pérez Eransus, "Jóvenes, vulnerabilidades y exclusión social: impacto de la crisis y debilidades del sistema de protección social," *Revista de Servicios Sociales* 57 (2014): 137-157.

continues to be the most predictive factor for the evolution of people in the youth labor market.[23] Eurostat indicates that the proportion of poorly qualified young people represented 70% of the population of not in employment, education, or training (NEET) in countries such as Spain and Portugal while exceeding 50% in other countries such as Holland, Denmark, Germany, Bulgaria, Austria, Romania and Italy.[24] However, it must be taken into account that less qualified workers will be more affected by the crisis. In the Spanish case, the employment rates of university students have been and are higher than those of those with a lower education level, such that in the middle ages of life, the employment rate reaches approximately 95%, while in the older generations, the rate is practically 100%. However, in the case of university graduates in the process of labor integration, in the current recession, employment rates are lower than those reached by previous generations of university students of the same age.[25]

Today, educational policies significantly influence the tomorrow social policy. In this sense, research within universities aims to "discover new scientific, artistic and technological knowledge, to ensure the development of society".[26] Well-educated people have better opportunities in the labor market, are less frequently unemployed, tend to be more satisfied with their job and, because they earn more, pay higher taxes and contributions to Social Security.[27] In recent years, the rate of early dropout has been reduced to 17.9%. The European average was 10.6%, while in Spain, the rate is much higher, 18.3%.[28]

Given this situation, it is necessary to continue deepening the knowledge of situations that especially affect young people in the Spanish territory.

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[23] Hans Dietrich, "Youth unemployment in Europe," *Theoretical considerations and empirical findings* (February 2012), https://library.fes.de/pdf-files/id/ipa/09227.pdf.

[24] Valentina Vasile and Irina Anghel. "The educational level as a risk factor for youth exclusion from the labour market," *Procedia Economics and Finance* 22 (2015): 64-71.

[25] FOESSA, Fundación, *VII Informe sobre exclusión social y desarrollo social en España (Madrid: Cáritas/Fundación FOESSA* ,2014), cap. 3, https://www.foessa2014.es/informe/uploaded/descargas/VII_INFORME.pdf.

[26] Alex Estrada García,"Estilos de aprendizaje y rendimiento académico,", *Revista Boletín Redipe* , no.7.7 (2018):218-228.

[27] O. E. C. D, Indicators, *Education at a Glance 2016*, (Paris: OECD Publishing, 2016), https://doi.org/10.1787/eag-2016-en.

[28] Ministerio de Educación, Cultura y Deporte, *Sistema Estatal de Indicadores de la Educación 2017,* (Madrid: Secretaría General Técnica. Centro de Publicaciones, 2017), https://sede.educacion.gob.es/publiventa/sistema-estatal-de-indicadores-de-la-educacion-edicion-2017/educacion-espana/22080.

Delving deeper into the perceptions and knowledge of their life experiences is a necessity for the development of actions from a social and educational perspective that helps improve their situation as a group. In this way, he proposes a perception study to understand the main concerns and situations of young people in the city of Toledo, which, along with other elements, can be an instrument of orientation for the design of local public policies aimed at young people and therefore of effective transition to employment programs.

II. **Method**

The main objective of the present study was to analyze the perception of young people in the city about their own situation. It was therefore intended to investigate the view of young people regarding their situations and to know what factors they identify as major problems and concerns. The study was carried out with a questionnaire prepared ad-hoc and administered in a survey process in schools and at street level through interviewers.

II.1. *Sample*

Representative sampling stratified by quotas in the nonschool population and by multieducational clusters was performed in the case of school environments. The conglomerates were established from educational centers and nonformal education entities. Stratified sampling by course and gender quotas was performed within each center. In the case of the nonschool population, the questionnaire was conducted on the street with sampling points in high population densities. A sampling error of 4.2% was applied with a 95% confidence interval, resulting in N = 505.

Stratification was performed by age, gender and professional situation: studying; working; and neither studying nor working. The sample comprised 505 young people between 16 and 24 years of age from the city of Toledo, of which 219 were men and 286 were women (43.4% and 56.6%, respectively). The age distribution was 15 to 17 years (186 cases, 36.9%), 18 to 21 years (191 cases, 37.9%), and 22 to 24 years (128 cases, 25.2%). In the stratification by professional situation, the percentages of young people currently studying, working, or neither studying nor working were 61.74%, 14.60% and 23.66%, respectively.

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Table 1
Distribution of the sample according to education level

	Level of education of the father	Level of education of the mother	Level of education of the young person
	% of the N in the table	% of the N in the table	% of the N in the table
I have not completed compulsory education	10.5%	7.7%	9.6%
Compulsory education	14.9%	16.1%	2.2%
ESO	18.8%	20.1%	23.3%
Baccalaureate	13.0%	10.8%	20.7%
Vocational training	18.6%	18.1%	14.3%
University studies	18.0%	21.3%	28.1%
Postgraduate or master's	3.3%	5.3%	0.2%
Doctorate	2.7%	0.4%	0.2%
NA	0.2%	0.2%	1.4%

Source: the authors

II.2. *Instrument*

The instrument for gathering information was an ad hoc questionnaire with a total of 38 questions with Likert type scale the following dimensions and variables: sociodemographic, general state of youth and lifestyle; attitude; social networks; problems of young people; attitudes toward gender-based violence, school bullying and cyber bullying; information and drug consumption; youth unemployment and job placement expectations; participation in organizations; and knowledge and assessment activities of the local youth council.

II.3. *Procedure*

Given the characteristics of the school population and the non-school population, it was necessary to develop and design an information collection procedure in two systems:

- Educational center: self-administered questionnaire in the presence of interviewers during the entire completion of the questionnaire. The interviewers completed the introduction and the instructions for completing the questionnaire, emphasizing the most complex questions or those with a filter question. Education centers: secondary education institutes/universities, 342 questionnaires (68% of the sample).
- Street: the questionnaire was completed with an interviewer in areas with a high concentration of young people, such as university environments, sports centers and leisure areas. Street: 163 questionnaires (32%).

Data collection was performed during the months of May and June 2016. Regarding the analysis procedure, descriptive data mining was performed with the SPSS Statistics 22 program from frequency tables and cross-tabulations. From them, Pearson r correlation matrices and an analysis of differences in means for the main dimensions of the questionnaire were developed.

III. **Results**

Below, we present the data relative to the main self-perceived problems of young people and how they measure each of them, in the general context of youth. This article presents the results of those that make direct reference to perceptions about the education and training situation and access to employment. In addition, a correlation analysis of different sociodemographic variables is performed with each of the main concerns reported by young people. To this analysis is added the configuration of two groups of analysis: the education level reached by young people and their situation regarding autonomy or dependence on the family home. Additionally, the education levels of the parents are analyzed.

Beginning with the analysis of the results, the view that young people have about *the adequacy of the educational system and curricula* to the labor market is one of the main perceived problems. A significant number of young people think the curricula pose a problem in motivation for learning and in providing a good educational foundation for entry into the labor market. The highest frequency scores reported for this concern are 7-10. Thus, grouping the scores of this interval, 55.1% indicate concern in this regard. Another problem of concern is *the lack of interest in studying,* which translates into

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significant dropout rates and academic failure. For the young people in this study, 51.5% indicate a concern between 7-10, and more than half of the sample reports this as a very important concern.

For the *problem of uncertainty about the future* of young people, the highest frequency score (21.6%) is the maximum score according to degree of importance, which is 10. Of these, 64.2% indicate that this as a very important problem. This is, therefore, one of the concerns that is clearly related to unemployment. *Difficulties in leaving the family home* also continues to be one of the most challenging problems for young people today. The highest frequency score, 16.4%, is the maximum score for level of concern. A total of 61.5% of the sample reported a level of concern between 7 and 10.

The majority of young people indicate that it is very important to address *quality of employment*. This element is especially important because precarity is one of the main characteristics of youth employment. Young people, as noted in the introduction, are affected by a segregated labor market that influences the quality of their jobs. Most of the young people surveyed scored this issue with a level of importance between 5 and 10, representing 79.2%.

Another relevant issue is *economic problems*; 74.4% rated this problem as more than 6, indicating that this issue is very important to young people. We can establish a certain relationship between *situation of unemployment* or difficulties with employment with *the economic situation* that follows.

To conclude the first part of the descriptive analysis regarding the main problems described by young people as very important, *unemployment* is presented as a perceived fundamental problem, with 70% providing scores between 7-10 for the level of importance for the *problem of unemployment*. That is, the perception of the importance of the problem of unemployment among the young population is a primary element, in accordance with the reality that this group lives.

The analysis reflected below shows the differences in perception regarding the general problems that affect young people, discerning between the perception of themselves and the perception of youth in general. A comparison of average scores is shown. In order of relevance in terms of identifying the problems that affect young people in general, *unemployment* and *uncertainty about the future* are the two elements that are most concerning to those surveyed. In terms of self-perception of self-problems, uncertainty of the future and the educational system and curricula have the highest scores; these are the most relevant problems reported, followed by unemployment, as shown in Table 2.

Table 2

Comparison of means for the perception of problems

	Problems of young people	Personal problems
Unemployment	7.41	7.70
Economic problems	7.09	7.00
Quality of employment	6.70	7.12
Difficulty leaving home, lack of support	6.88	6.66
Uncertainty about the future	7.09	8.05
Lack of interest in studies	6.37	6.80
Educational system, curricula	6.71	7.81

Source: the authors

For the following analysis, a comparison of Student's t-test means is performed, as well as a correlational analysis between different variables and perception of the problems. Following the main positions presented in the introduction, it is hypothesized that the perception of young people regarding the problems they consider important are affected by different factors that generally relate to protective or risk factors in their socioeconomic situation and closely relate to their levels of autonomy. Thus, to perform these tests, the following variables were taken into account in comparative and correlational perspectives: education level attained, education level of the parents, education level of the mother, place of residence (if residing with the parents or independently) and origin of income (own or from other people). The main hypotheses therefore indicate that education level, both of one's own and that of the parents, minimizes perceived risk to certain problems. However, depending on the place of residence and therefore on the autonomy of young people, some more relevant problems will be placed over others. Thus, problems related to the economic situation and unemployment will be more worrisome to people who live independently, due to the risks of not having economic/monetary and employment needs covered to maintain their autonomy; young people who live with their parents will be more concerned about problems related to the educational system because, to a greater extent, they remain in it, and perception of problems related to leaving home will be more significant because this situation has not occurred.

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Table 3

T-test. Differences in the perception of problems according to place of residence

	Place of residence	N	Mean	Standard deviation	t	Sig. (bilateral)	Dif. means
Unemployment	In the home of the family of origin with one or both parents	328	7.52	3.208	-1.983	.048	-1.206
	A home of their own independent of the family of origin	29	8.72	2.170	-2.740	.009	-1.206
Quality of employment	In the home of the family of origin with one or both parents	323	6.94	3.203	-2.086	.038	-1.318
	A home of their own independent of the family of origin	27	8.26	2.474	-2.592	.014	-1.318

Source: the authors

As detailed in Table 3, the comparison of mean differences between those living with parents and those living alone shows significant differences, on the one hand, regarding the perception of the unemployment problem, with a difference of -1.206 and a significance of .009. That is, unemployment is a problem that concerns young people who have left home (8.72 average) more so than those who still live with their parents (7.52). On the other hand, on the perception of quality of employment, a value of -1.318 was obtained, with a significance of .014.

Taking into account the usual source of income for living, the variables that are significantly different are the difficulty leaving home and access to support, with a difference of means of -.994 and a significance level of .004, which implies that young people who live off of the income of other people are less concerned about these issues than those who live off of their own income. Although this result may be paradoxical, with the understanding that

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people who have not yet left home could be more concerned about that issue, this result could be due, as noted above, to difficulties experienced in leaving home and lack of support in this sense, which is different from those who have already done so, as well as to difficulties of sustaining a household.

Table 4

T-test. Differences in the perception of problems according to income origin

	Personal economic situation	N	Mean	Standard deviation	t	Sig. (bilateral)	Dif. means
Difficulty in leaving home, lack of support	Income from other people	350	6.60	3.020	-2.802	.005	-.994
	Own income	88	7.59	2.782	-2.943	.004	-.994
Educational system, curricula	Income from other people	355	7.97	2.276	2.666	.008	.770
	Own income	89	7.20	2.989	2.269	.025	.770

Source: the authors

For the variables that present a statistically representative difference, youth who live on other people's income are more concerned about problems related to the educational system and curricula, reporting a mean difference of .770 with a significance level of .008. In this case, this result is observed because the vast majority of young people who study or have an interest in continuing to do so live in the family home and/or depend on their own income (Table 4)

Table 5 shows the correlational analysis taking into account, as variables, whether there is any relationship between education level (one's own and, especially, the education level of the parent) and the perception of personal problems, which in general correlate inversely with the education levels of the parents. That is, there is a greater perception of problems by young people when parents have lower education levels. This is reflected, for example, in difficulties leaving home; lower education levels of the father and the mother (Pearson correlation, -.228 with a significance of .00) result in greater concern. Regarding concern about unemployment, a lower education level of the father results in greater

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Table 5

Correlations of personal problems and one's own education level and that of the parents

Personal problems		Level of studies completed	Education level of the father	Education level of the mother
Unemployment	Pearson correlation	.223**	-.181**	-.152**
	Sig. (bilateral)	.000	.000	.001
	N	487	474	482
Economic problems	Pearson correlation	.129**	-.126**	-.161**
	Sig. (bilateral)	.004	.006	.000
	N	486	474	482
Quality of employment	Pearson correlation	.187**	-.105*	-.143**
	Sig. (bilateral)	.000	.023	.002
	N	479	466	474
Difficulty leaving home, lack of support	Pearson correlation	.171**	-.131**	-.228**
	Sig. (bilateral)	.000	.004	.000
	N	481	469	476
Uncertainty about the future	Pearson correlation	.117**	-.119**	-.148**
	Sig. (bilateral)	.010	.009	.001
	N	487	473	481
Lack of cultural activities, lack of leisure spaces	Pearson correlation	.091*	-.084	-.109*
	Sig. (bilateral)	.046	.069	.017
	N	481	468	476
Lack of interest in studying	Pearson correlation	.053	-.062	-.096*
	Sig. (bilateral)	.240	.180	.036
	N	486	473	481
Education level of the father	Pearson correlation	-.018	1	.594**
	Sig. (bilateral)	.697		.000
	N	474	483	480
Education level of the mother	Pearson correlation	.008	.594**	1
	Sig. (bilateral)	.855	.000	
	N	482	480	491

Source: the authors

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concern by young people, with a Pearson correlation of - .181 and a significance level of .00.

An important piece of information that appears in the correlation analysis and that may be related to the configuration of households as a function of education level is the strong correlation between levels of education of the mother and those of the father, represented by a Pearson coefficient of .594 and a significance of .00. The higher the maternal education level is, the higher the education level of the father. That is, a high education level reported for the mothers indicates a high education level for both the parents. To analyze how paternal educational training acts as a factor on the perception of problems by young people, a new analysis of the differences of means using T-tests is conducted. Education levels are grouped as follows: completed higher education or no education.

Table 6

T-tests of the education level of fathers and perceived personal problems by young people

	Education level of the father	N	Mean	Standard deviation	Sig. (bilateral)	Difference in means
Unemployment	Higher education	112	6.85	3.291	.000	-1.166
	Higher education	362	8.01	2.713	.001	-1.166
Economic problems	Higher education	113	6.33	3.107	.007	-.897
	Higher education	361	7.22	3.056	.008	-.897
Difficulty in leaving home, lack of support	Higher education	113	6.15	3.194	.026	-.729
	Higher education	356	6.88	2.963	.033	-.729
Uncertainty about the future	Higher education	115	7.61	2.487	.007	-.651
	Higher education	358	8.26	2.175	.013	-.651

Source: the authors

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Again, statistically significant differences are verified in those variables that relate to economic and employment situations; therefore, young people who perceive these problems with greater concern are those whose parents have lower education levels. This difference in means is reflected, as we see in Tables 6 and 7, in problems related to unemployment (-1.669), economic difficulties (-.897), difficulties in leaving home and access to support (-.729) and uncertainty about the future (-.651).

Table 7

T-tests of the education level of mothers and perceived personal problems by young people

	Education level of the mother	N	Mean	Standard deviation	Sig. (bilateral)	Difference in means
Unemployment	Higher education	129	7.11	3.085	.009	-.784
	Higher education	353	7.89	2.856	.013	-.784
Economic problems	Higher education	130	6.48	3.063	.028	-.694
	Higher education	352	7.17	3.078	.029	-.694
Difficulty in leaving home, lack of support	Higher education	128	5.67	3.092	.000	-1.328
	Higher education	348	7.00	2.965	.000	-1.328
Uncertainty about the future	Higher education	131	7.63	2.576	.012	-.588
	Higher education	350	8.21	2.155	.021	-.588

Source: the authors.

IV. **Conclusions**

When analyzing the problems of young people, the main concern is unemployment and the problems arising from it, which generates great

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uncertainty about the future. However, the education level of parents can minimize the perceived risk of certain problems. This confirms the well-known theory of Bourdieu,[29] on the relationship between cultural capital and academic and labor outcomes. Furthermore, the vast majority of young people who study or have an interest in continuing to do so live in the family home and/or depend on their parent's income. Notably, young people who live off of other people's income are more concerned with problems related to the educational system and curricula. As reflected in the specialized literature, training, especially at higher levels, generally acts as a protective factor against the main risks and, more specifically, the perception of these risks. As noted in the document Youth, Inequalities and Social Exclusion by the Foessa Foundation, [30] among others, one of the greatest factors of vulnerability for young people is coming from background of families in situations of social exclusion; hence relating this variable with education levels could respond this phenomenon.

Problems related to the economic situation and unemployment are more worrisome to people who live independently, due to the risk of not having sufficient economic and employment needs met, while young people who live with their parents are more concerned with the problems related to the educational system because, for the most part, they are still in school, and with perceived problems related to leaving home because this situation has not yet occurred.

Studies such as those by Meltze, Muir and Craig, [31] found that trusted adults have more influence on the circumstances of young people and their future trajectories. This perspective provides a new picture of how the consequences of a relationship vary according to the level of commitment/risk of the young people. This suggests that while it is potentially important for all young people, adult relationships of trust play a particularly important role for young people who are at risk of becoming disconnected or who are already disconnected and who lack other support. For successful training actions that improve employment rates of young people, a framework of complex relationships is needed that commits to coresponsibility and

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[29] Pierre Bourdieu and J. C. Passeron, "La distinction, critique sociale du jugement," (Paris: Éditions de Minuit, 1979).

[30] FOESSA, Fundación, *VII Informe sobre exclusión social y desarrollo social en España* (Madrid: Cáritas/Fundación FOESSA ,2014),chapt. 3, https://www.foessa2014.es/informe/uploaded/descargas/VII_INFORME.pdf.

[31] Ariella Meltzer, Kristy Muir, and Lyn Craig, "The role of trusted adults in young people's social and economic lives," *Youth & Society* 50, no. 5 (2018): 575-592.

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coleadership of all educational agents, as noted by Longás and Riera.[32] This leads to relying on new educational policies that promote equity and inclusion, not only focusing on when to intervene but also on how and where. [33] The lack of availability of jobs due to structural change and the economic crisis is undoubtedly one of the reasons why young people are not employed in many countries.[34]

Within this process, a significant number of young people have been excluded from the labor market and the education system, commonly known as *jóvenes neet* (from the Spanish nini=*ni estudia, ni trabaja,* neither studies nor works), and this group has become a priority of employment and educational policies developed in recent years in Spain and in Europe.[35] The demands of companies are concentrated in two broad categories: specific knowledge, which is the theoretical knowledge related to the training received and the functions that the individual will have to develop in the professional field; and experience/internships as an element of prior contact with the working world, whether or not it is related to the nature of the training received and cross-training competencies, understood as the skills or abilities developed by the individual independently of their theoretical training, applicable to any stage of life.[36] Therefore, when we speak of youth, it is necessary to take into account the transition from school to the labor market, where access to work and the creation of a home of one's own will correctly mark the transition to adult life.[37] The most influential factors in the lives of young people are the family, which is considered the nucleus to meet

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[32] Jordi Longás and Jordi Riera. "Fracaso escolar y tránsito de los jóvenes hacia la vida adulta. Razones y propuestas para apoyar la transición de la escuela al trabajo," *Educación Social,* no. 49 (2007): 145-160.

[33] Jordi Longás Mayayo, et al. "Análisis de factores de apoyo a trayectorias de éxito escolar en la enseñanza secundaria en contextos de pobreza y vulnerabilidad social en España. Un estudio de casos múltiples." REXE. *Revista de Estudios y Experiencias en Educación*, no.15:28 (2016): 107-127.

[34] Roberto Moreno López, Rosa Marí Ytarte and Beatriz Esteban Ramiro. "Labour market, education and the specific youth programs: study of perception in Toledo-Spain." *International Journal of Adolescence and Youth*,25:*1* (2019): 1-17.

[35] Secretaria de Trabajo, Migraciones y Seguridad Social . [Ministry of Labour, Migrations and Social Security]. "Informe jóvenes y mercado de trabajo junio-2018". ihttp://www.mitramiss.gob.es/es/sec_trabajo/analisis-mercado trabajo/jovenes/numeros/2018/junio_2018.pdf

[36] en el Empleo, Observatorio de Innovación. "Informe EOI sobre jóvenes y mercado laboral: El camino del aula a la empresa." (2014) .

[37] Juan García-Fuentes, "Exclusión socio-educativa de los ni-ni: análisis descriptivo de los procesos de transición." *Revista Internacional de Didáctica y Organización Educativa* 2.1 (2017).

the needs and provide the necessary support during the childhood and youth stages,[38] which influences the school and work trajectories of their sons and daughters; the educational system, which poses some questions based on the existing processes of educational exclusion and the way of combating those processes;[39] and the labor market, which is the goal of a transition marked by the end of academic studies and that provides important economic support for the individual.[40] Not possessing competencies is a substantial difficulty when entering the labor force, placing young people who do not acquire skills at high risk of exclusion and social vulnerability.[41,42,43,44] However, perhaps the response should not only result from introducing pedagogical innovations and/or improvements in the academic curriculum but also by considering and addressing other problems that exert a positive modulating effect on the education of young people. In this sense, we focus on support programs for the transition and pedagogical accompaniment framed in social education.[45]

In this context and considering the perceptions of young people in their local environments, it is considered essential to contextualize these in the proposal by Planas,[46] conceiving that all possible actions should be integrated taking into account that there are three types of institutions that mainly intervene in the relationship between education and employment: first, education and professional training systems; second, companies in the broadest sense; and third, interface institutions that intervene in the regulation of the labor market. However, in addition, the space occupied by formal

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[38] Aina Tarabini-Castellani Clemente, "¿Qué se esconde bajo las apariencias?,"*Cuadernos de pedagogía*, 454 (2015):42-43.

[39] Juan María Escudero et al., "Estudiantes en riesgo, centros escolares de riesgo: Respuestas educativas al alumnado en situaciones de vulnerabilidad," Murcia: DM (2013).

[40] Ulrich Beck, "La sociedad del riesgo. Hacia una nueva modernidad", Editorial PAIDOS. Buenos Aires-Argentina (1998).

[41] Anna Jolonch, "Exclusió social: dels marges al cor de la societat", Fundació Lluís Carulla (2008).

[42] Sebastián Sarasa and Albert Sales, "Itinerarios y factores de exclusión social", Fundación La Caixa (Barcelona, 2009).

[43] Cristina Boada et al., "Informe sobre el risc de fracàs escolar a Catalunya", Generalitat de Catalunya. Consell de Treball, Econòmic i Social de Catalunya, Col·lecció Estudis i Informes 26 (Barcelona, 2011).

[44] Javier Gil Flores, "Hábitos lectores y competencias básicas en el alumnado de educación secundaria obligatoria." *Educación XXI*, 14.1 (2011), 117-134.

[45] Roberto Moreno López, "*Formación e inserción sociolaboral en Educación Social",* Vol. 27. Nau Llibres, (2018).

[46] Jordi Planas Coll, "La relación entre educación y empleo en Europa," *Revista de Sociologia* 96.4 (2011):1047-1073.

initial training in the process of acquiring skills and the weight of academic titles, although it continues to be determinant, decreases in favor of nonformal and informal processes that occur throughout the course of life. Therefore, the present study brings us closer to the precepts presented by Esteban and Sáez[47] that training, in a university or outside of it, is convened. If it is necessary to train, it is necessary to keep in mind who should be trained, for what and where. If people need to be qualified, i.e., future professionals, for certain types of work activities, one must not only think about appropriate training and how the training should mimic the reality of day-to-day employment but also of incorporation into culture, to the current-day scenarios professionals face.

There are certain limitations of the study of respect for the sample, since this study, although representative for the city of Toledo should not be taken to extrapolate the results in a literal way for other contexts. It should be cautious to take the associated results to combine with other studies in the same direction. This study offers us results that approximate us in the appropriate direction for decision making at the local level for the development of educational, training and employment-oriented actions in youth that promotes the most specialized way of supporting young people. Future studies would have to deepen the perception of trainers, specifically and business as a whole on these same problems studied.

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Stakeholder perspectives on general competences: The case of graduates of Vietnam National University, Hanoi

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Abstract: This research draws from theories of graduate employability and transferable skills and the TASE project's 13 graduate competences model, to explore the evaluation of the various stakeholders concerning the degree to which VNU graduates have acquired general competences. The survey measured three variables: (i) importance, (ii) achievement and (iii) priority, using the four categories of 'none', 'weak', 'considerable', and 'strong'. Between February and December 2018, a total of 818 informants agreed to participate, including 168 employers, 152 alumni, 189 students who had just graduated in 2018 or were about to graduate, 51 lecturers and university managers, and 258 students. The importance of the 13 general competences was rated more highly than graduate achievement. The ability to uphold professional, moral and ethical values was rated by VNU employers as of greatest importance and the highest achievement. Similarly, VNU students and alumni rated this ability as their highest achievement. The ability to conduct research and the ability to understand, value, and respect diversity and multiculturalism were rated as of lowest importance by VNU employers. The former (ability to conduct research) was rated as of lowest importance by VNU alumni and their lowest achievement by both VNU alumni and VNU students. VNU students rated the latter ability (to understand, value, and respect diversity and multiculturalism) as of least importance. The ability to initiate, plan,

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organise, implement and evaluate courses of action was rated the lowest achievement by VNU employers. The ability to apply knowledge in practice was considered of greatest importance by both VNU students and alumni, but for the latter group this ability ranked equally with the ability to communicate clearly and effectively. Students gave most of their own general competences a significantly lower rating than that given by employers to alumni achievement.

Keywords: General competences; graduate employability; transferable skills; Tuning methodology; Vietnam National University Hanoi; stakeholders ratings.

I. **Introduction**

In the context of social change, the transition from the university to the workplace has become increasingly challenging for graduates. Because new types of jobs are being created, employers find that formal learning does not keep pace with changing workforce needs. Consequently, they are not looking for employees who will be a perfect fit, nor do they expect higher education to produce graduates who can meet all work requirements. Instead, they look for the ability to learn[1] and attributes which enable graduates to adapt to the workplace, be flexible in moving between different jobs, and advance university-level disciplinary knowledge.[2] These general competences are often independent of graduates' degree subjects.[3] Surveys show that companies look for a graduate's ability to work in a team and relate with co-workers, clients, and collaborators – skills that, in many cases, prove to be more important than their technical knowledge.[4]

Crosling and Ward assert that teamwork skills are required by all employers, regardless of economic sector, specifically skill in building relationships, and the kind of communication most used in teamwork.[5] Yorke and Harvey agree that these desirable competences are often independent of the degree subject and consist of interactive attributes, such as communication skills, interpersonal skills and team working; and personal attributes, such as

[1] Rupert Maclean and Victor Ordonez, "Work, skills development for employability and education for sustainable development," *Educational Research for Policy and Practice* 6, no. 2 (2007): 123-140.

[2] Mantz Yorke and Lee Harvey, "Graduate Attributes and Their Development," *New Directions for Institutional Research* 2005, no. 128 (2005): 41-58, https://doi.org/10.1002/ir.162.

[3] Yorke and Harvey, "Graduate attributes," 43.

[4] Julio Hernández-March, Mónica Martín D. Peso, and Santiago Leguey, "Graduates' Skills and Higher Education: The Employers' Perspective," *Tertiary Education and Management* 15, no. 1 (2009): 10.

[5] Glenda Crosling and Ian Ward, "Oral Communication: The Workplace Needs and Uses of Business Graduate Employees," *English for Specific Purposes* 21, no. 1 (2002): 41.

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sound intellect and problem solving, analytic, critical and reflective ability, willingness to learn and continue learning, flexibility and adaptability, risk-taking and self-management skills.[6] Michael Eraut remarks that what is emphasised at university and what is emphasised by employers are not always the same thing.[7] The concern is that universities cannot train graduates to meet the demands of a rapidly changing world.[8]

In Europe, research on higher education and graduate employment in Europe,[9] led by the Universität Gesamthochschule Kassel in Germany, was conducted during 1998-2000 in nine countries in the European Union, Norway, Czech Republic, and Japan to assess graduate competences. The research team developed 36 competences out of the body of literature on the subject and generated a questionnaire for graduates to evaluate work requirements and their achievements at graduation. Over 40,000 graduates from institutions of higher education responded. The survey results indicated that graduates believed that requirements on the job demanded more of them than were afforded by the competences acquired before graduation. A comparison of the perceived individual job requirements and acquired competences shows that graduates considered themselves fully qualified or even overqualified in the following five competences:

- Field-specific theoretical knowledge
- Broad general knowledge
- Foreign language proficiency
- Learning abilities
- Manual skills

When rating perceived work requirements some four years after graduation, graduates seemed to feel deficiencies in most areas. The ones most strongly emphasised were the following:[10]

- Negotiating
- Planning, coordinating and organising

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[6] Yorke and Harvey, "Graduate attributes," 43.

[7] Michael Eraut, "Transfer of Knowledge between Education and Workplace Settings," in *Workplace Learning in Context*, eds. Helen Rainbird, Alison Fuller, and Anne Munro (London: Routledge, 2004), 201.

[8] Hernández-March, Peso, and Leguey, "Graduates' Skills and Higher Education," 10.

[9] Harald Schomburg and Ulrich Teichler, *Higher Education and Graduate Employment in Europe: Results from Graduate Surveys from Twelve Countries, vol. 15* (Springer Science & Business Media, 2007), 93.

[10] Schomburg and Teichler, *Higher Education,* 99.

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- Computer skills
- Time management
- Taking responsibility, decision-making
- Working under pressure
- Leadership
- Applying rules and regulations

In particular, the research results showed that in the cognitive domains emphasised in their majors, graduates felt better prepared for their job than the job actually required of them. In contrast, graduates often noted deficiencies concerning the application of knowledge to job tasks. Similar results were found for socio-communicative skills, values and orientations relevant in the workplace.[11]

A similar effort to renew the system of higher education in Europe is the Tuning project, conducted by the University of Deusto (Spain) and the University of Groningen (Netherlands). The Tuning project construes the concept of competences as describing the capacity for a dynamic combination of attributes that permit a competent performance, or as part of the final product of an educational process. Competences and skills are understood to include knowing and understanding (theoretical knowledge of an academic field, the capacity to know and understand), knowing how to act (practical and operational application of knowledge to certain situations), knowing how to be (values as an integral element of the way of perceiving and living with others and in a social context).

In 2003, the Tuning project administered a large-scale survey in Europe and Latin America, consulting more than 5,000 graduates who had completed their university study during the preceding five years. Nearly a thousand organisations and almost another thousand academics were also surveyed on the importance of the competences and the level of graduates' achievement of them. The Tuning project's model of competences was tested in five degree courses organised according to the European credit transfer system. The survey was then extended to other universities in four regions. The Tuning project agreed on a list of 16 generic competences, considered global because of their coincidence in the four regions covered in the project, but perceived and organised according to factors that respond to regional logic.[12]

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[11] Schomburg and Teichler, *Higher Education,* 99.

[12] Pablo Beneitone and Edurne Bartolomé, "Global Generic Competences with local Ownership: A Comparative Study from the Perspective of Graduates in Four World Regions," *Tuning Journal for Higher Education* 1, no. 2 (May 2014): 306.

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In South East Asia, the Tuning project (TASE) supported universities in 10 ASEAN countries and the ASEAN University network (AUN) to identify generic and specific competences for building up competence-based learning programmes of medicine, education, and civil engineering. Participants from European universities and ASEAN universities agreed on 13 general competences for the region, coinciding with 16 global competences. The various stakeholders made their own choice of 13 general graduate competences. Since VNU is an active member of AUN, the researcher at the VNU Institute for Education Quality Assurance aims to measure the assessment of VNU stakeholders using Tuning project methodology, thus making it possible to benchmark VNU graduates' general competences against those used in the TASE project. This paper discusses the results of the surveys among graduates, employers, lecturers and current students at Vietnam National University, Hanoi.

II. **Vietnamese context**

Contemporary Vietnam provides an arena for exploring changes in the workforce in the country's transition from a centrally planned economy to a more market-oriented one. The education offered by universities does not provide graduates with the skills and knowledge required for economic growth. Mona Mourshed, Diana Farrell, and Dominic Barton argue that there is still a disconnect between what educational providers, on the one hand, and employers, on the other, perceive to be necessary skills for the workforce.[13] Universities provide programmes and train in skills that do not adequately reflect the needs of the labour market.[14] In 2008, the World Bank reported that employers most often sought soft skills, or attitudes, and generic skills. While universities focus on problem-solving skills, such as "decision-making, learning, and information processing", employers would also like them to focus on the development of "interpersonal skills", needed for

[13] Mona Mourshed, Diana Farrell, and Dominic Barton, *Education to Employment: Designing a System that Works* (McKinsey Center for Government, 2013), 18, accessed October 17, 2019, https://www.compromisorse.com/upload/estudios/000/222/Education-to-Employment_FINAL.pdf.

[14] Christian Bodewig and Reena Badiani-Magnusson, *Skilling up Vietnam: Preparing the Workforce for a Modern Market Economy* (World Bank, 2014), 18, https://openknowledge.worldbank.org/bitstream/handle/10986/18778/888950PUB0Box30lso0829400June172014.pdf?sequence=1.

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negotiation, coaching, and conflict management.[15] These employer concerns seem consistent, even when there are structural changes and when the demand for labour fluctuates.[16]

Economic renewal (the Doi Moi policy) was introduced by the Vietnamese government in 1986 to allow the country to make the transition from a planned economy to a market-oriented one. The demand for a workforce trained to meet the requirements of those changes in society is placed upon the universities. Tran Quang Trung and F. W. Swierczek contend that Vietnamese employers, like employers elsewhere in the world, demand that graduate attributes match the needs of the contemporary workplace, such as "learning, communication, information processing, problem solving, and interpersonal skills."[17]

A survey conducted by Nguyen Thi Thanh Hong of a sample of 400 education students demonstrates that the learning methods used by these students at university were frequently characterised by "notetaking, combined with reading textbooks and reference material", "learning by memorising the lecture notes given in class", and "learning according to what has been set out by the course outline and syllabus".[18] There is increasing concern that the limited scope, content and approaches to learning that students encounter in such university courses are inadequate to meet the demands of both education and other professional practices.[19]

III. **Graduate competences**

Graduate competence is "the proven ability to use knowledge, skills and personal, social and/or methodological abilities, in work or study situations and in professional and personal development."[20] Competence is a general

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[15] Quang Trung Tran and Fredric William Swierczek, "Skills Development in Higher Education in Vietnam," *Asia Pacific Business Review* 15, no. 4 (2009): 581, https://doi.org/10.1080/13602380802364175.

[16] World Bank, *Vietnam - Higher Education and Skills for Growth* (Washington, DC: World Bank, 2008), 169, accessed October 17, 2019, http://siteresources.worldbank.org/INTEASTASIAPACIFIC/Resources/Vietnam-HEandSkillsforGrowth.pdf.

[17] Tran and Swierczek, "Skills development," 565-86.

[18] Thi Thanh Hong Nguyen, "Factors Influencing the Self-Study Quality for Education Theory Subject of the Students at Universities of Education," *Vietnamese Education Review* 182, no. 2, (2008): 22-4.

[19] Tran and Swierczek, "Skills development," 565-86.

[20] European Parliament and European Council, "Recommendation of the European Parliament and of the Council of 23 April 2008 on the Establishment of the European

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term, covering a wide range of abilities.[21] The skills that allow graduates to acquire the necessary work competences, satisfy the requirements of the modern workplace, and apply abstract cognitive abilities, are transferable. These desirable attributes are often independent of the degree subject, and consist of interactive abilities, including communication skills, interpersonal skills and team work, as well as personal attributes, including intellect and problem solving, analytic, critical and reflective ability, willingness to learn and continue learning, flexibility and adaptability, risk-taking and self-management.[22]

The European Credit Transfer and Accumulation System (ECTS) Guide 2015 defines competence as "the proven ability to use knowledge, skills and personal, social and/or methodological abilities, in work or study situations and in professional and personal development". "In the context of the European Qualifications Framework, competence is described in terms of responsibility and autonomy" (Recommendation 2008/C 111/01).[23] An educational program's learning process aims to foster competences. Competences are developed in all course units and are assessed at different stages of a program. Some competences relate to a subject-area (are specific to a field of study), whereas others are generic (common to any degree course).[24]

Reports in the literature suggest that employers' perceptions play a key role in the definition of the required skills for graduates.[25] Companies require workers with flexible skills, trainability, persuasive skills and teamwork skills.[26] Most employers are looking for graduates who are proactive and can use higher level skills, including analysis, critique, synthesis and multi-layered communication, to facilitate innovative teamwork in catalysing the

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Qualifications Framework for Lifelong Learning," *Official Journal of the European Union* 51, no. C 111 (2008): 5, http://eur-lex.europa.eu/legal-content/EN/TXT/ PDF/?uri=CELEX:32008 H0506(01)&from=EN.

[21] Howard Davies, "Competence-Based Curricula in the Context of Bologna and EU Higher Education Policy," *Pharmacy* 5, no. 2 (2017): 64-75, https://doi.org/10.3390/ pharmacy5020029.

[22] Yorke and Harvey, "Graduate Attributes," 43.

[23] European Parliament and European Council, "Recommendation," 5.

[24] *ECTS Users' Guide* (Luxembourg: Publications Office of the European Union, 2015), 22, http://ec.europa.eu/dgs/education_culture/repository/education/library/publications/2015/ ects-users-guide_en.pdf.

[25] Fátima Suleman, "Employability Skills of Higher Education Graduates: Little Consensus on a Much-Discussed Subject," *Procedia-Social and Behavioral Sciences* 228 (2016): 171, https://doi.org/10.1016/j.sbspro.2016.07.025.

[26] Maclean and Ordonez, "Work, Skills Development," 135.

transformation of their organisation.[27] These are generic graduate attributes which have been conceptualised as the skills, knowledge and abilities of university graduates, beyond disciplinary content knowledge, which are applicable in a range of contexts and are acquired as a result of completing any undergraduate degree.[28] These desirable attributes are often independent of the degree subject but allow graduates to acquire necessary skills, satisfy the requirements of the new workplace, transfer abstract cognitive skills, work with others, lead, and solve problems.

Bennett, Dunne, and Carré posit that the skills individual graduates develop are both constrained and enabled by work circumstances, particularly influencing the way graduates use their knowledge, from directly applying specific skills to thinking strategically about the application of more abstract knowledge.[29] Depending on the context of transfer, the process can be described as "near transfer", where certain attributes enable graduates to transfer knowledge and skills to contexts similar to educational contexts, or "far transfer", where other attributes infuse and enable all scholarly learning and knowledge, transcend disciplinary boundaries, and enable students to reshape and transform knowledge to meet new challenges in contexts far removed from the original university discipline.[30]

With transferable skills, the implication is that "skills developed within one situation (education) are also useful when transferred to another situation (employment)."[31] Transferable skills, such as effective communication and teamwork, are not specific to the subject one is currently studying, but are much valued by employers.[32] Bennett contends that transferable skills are needed in any job and enable people to participate in a flexible and adaptable

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[27] Lee Harvey, Sue Moon, Vicki Geall, and Ray Bower, *Graduates' Work: Organisational Change and Students' Attributes* (Birmingham: Centre for Research into Quality, 1997), 43, https://doi.org/10.1177/095042229701100504.

[28] Simon Christopher Barrie, "Understanding What we Mean by the Generic Attributes of Graduates," *Higher Education* 51, no. 2 (2006): 217, https://doi.org/10.1007/s10734-004-6384-7.

[29] Neville Bennett, Elisabeth Dunne, and Clive Carré, *Skills Development in Higher Education and Employment* (Florence: Taylor & Francis, Inc., 2000): 16.

[30] Bennett, Dunne, and Carré, *Skills Development,* 17.

[31] Stephen Fallows and Christine Steven, "The Skills Agenda," in *Integrating Key Skills in Higher Education: Employability, Transferable Skills and Learning for Life*, eds. Stephen Fallows and Christine Steven (London: Kogan Page, 2000), 3-12.

[32] Martin J. Haigh and Marianne P. Kilmartin, "Student Perceptions of the Development of Personal Transferable Skills," *Journal of Geography in Higher Education* 23, no. 2 (1999): 196, https://doi.org/10.1080/03098269985461.

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workforce.[33] Her summary of transferable skills includes personal skills, such as the ability to work well with others, the ability to organise, self-motivation,"a basic capability to use information technology", and also communication skills, initiative, creativity, the capacity to solve problems, and leadership. Bennett reasons that transferable skills are important because they permit a freshly appointed graduate to make an immediate contribution to a business, especially a smaller firm.[34]

Haigh and Kilmartin argue that transferable skills include a number of categories, such as 1 - problem solving (requiring analysis, lateral thinking, setting questions, identifying strategies, evaluating success); 2 - communication (involving reading/listening, choice of styles, coherent argument, analysis, synthesis, self-evaluation, peer evaluation, author evaluation); 3 - learning skills (necessitating independence, cooperation, ranges of strategies); 4 - self-management (demanding the ability to clarify values, set goals, manage time, assess self); 5 - information skills (including literature research, information retrieval, information handling, referencing); and 6 - teamwork (taking responsibility, taking initiative, negotiation, team evaluation).[35]

Similarly, Fallows and Steven insist that transferable skills include the retrieval and handling of information, communication and presentation, planning and problem solving, social development and interaction.[36] Moreover, Stephenson posits that capable people have confidence in their ability to take effective, appropriate action, explain what they are seeking to achieve, live and work effectively with others, and continue to learn from their experience, both as individuals and in association with others, in a diverse and changing society.[37]

In the same vein, Bennett maintains that the general list of transferable skills can be broadly understood to include qualities, characteristics, skills and knowledge that promote employability, both in general and specifically for graduates.[38]

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[33] Roger Bennett, "Employers' demands for personal transferable skills in graduates: A content analysis of 1000 job advertisements and an associated empirical study," *Journal of Vocational Education and training* 54, no. 4 (2002): 457, https://doi.org/10.1080/13636820200200209.

[34] Bennett, "Employers' demands," 457-76.

[35] Haigh and Kilmartin, "Student perceptions," 196.

[36] Fallows and Steven, "The skills agenda," 8.

[37] John Stephenson, "The Concept of Capability and Its Importance in Higher Education," in *Capability and quality in higher education,* eds. John Stephenson and Mantz Yorke (London: Kogan Page, 1998), 1-13.

[38] Bennett, "Employers' demands," 457-76.

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Barrie classifies graduate attributes according to a four-level framework, ordered by complexity. The two most complex conceptions of generic attributes (as learning outcomes) identified in his research including the "enabling" and "translation" conceptions.[39] He contends that three important learning outcomes of university education, such as scholarship, global citizenship and lifelong learning, are generic attributes analogous to the "enabling" conception. These include interwoven skills, abilities and attributes at the heart of disciplinary knowledge and human capability. Scholarship is an attitude or stance towards knowledge. Global citizenship is an attitude or stance towards the world, and lifelong learning is an attitude or stance of students towards themselves. The enabling of graduate attributes is supported by the development of these attributes in their translation (i.e., application). The translation level generic attributes enable graduates to make use of, or apply, disciplinary knowledge, thus potentially changing and transforming such knowledge through its application. Included on the translation level are clusters of linked personal attributes, cognitive abilities and skills in application, which are the learning outcomes that graduates possess, together with knowledge of a discipline. These skills and abilities are organised into the five key clusters: research and inquiries; information literacy; personal and intellectual autonomy; ethical, social and professional understanding; and communication.[40]

These generic attributes are transferable, transcending disciplinary boundaries, even though they are initially developed within disciplinary contexts. They provide the building blocks for knowledge of a discipline but are more long-lasting and important than the disciplinary knowledge they support. Once developed, these graduate attributes are perceived to provide a reusable framework that enables students/graduates to acquire and shape new knowledge as required – even in the context of other disciplines.[41]

These general competences and transferable skills can be found in Haigh and Kilmartin's model of components of general competences,[42] and the 13 general competences model of the TASE project. Haigh and Kilmartin's

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[39] Simon Christopher Barrie, "Academics' understandings of generic graduate attributes: A conceptual basis for lifelong learning," in *Graduate Attributes, Learning and Employability. Lifelong Learning*, eds. Paul Hager and Susan Holland (Book Series, v. 6, Dordrecht: Springer, 2006), 157-8, https://doi.org/10.1007/1-4020-5342-8_8.

[40] Barrie, "Academics' Understandings," 158-59.

[41] Barrie, "Understanding," 229-30.

[42] Barrie, "Understanding," 229-30.

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model consists of six groups of skills, such as problem solving, communication, learning skills, self-management, and teamwork.[43] Meanwhile, the TASE model includes 13 general competences and abilities: to work collaboratively and effectively in diverse contexts; to use information and communication technology purposefully and responsibly; to uphold professional, moral and ethical values; to demonstrate responsibility and accountability towards society and the environment; to communicate clearly and effectively; to think critically, reflectively and innovatively; to understand, value, and respect diversity and multiculturalism; to pursue lifelong learning and continual professional development; to demonstrate problem solving abilities; to initiate, plan, organise, implement and evaluate courses of action; to conduct research; to demonstrate leadership attributes; and to apply knowledge in practice.[44]

This research draws from theories of graduate employability and transferable skills, and specifically from the TASE project's 13 graduate competences model,[45] to explore the evaluations of the various stakeholders of Vietnam National University, Hanoi, on the degree to which VNU graduates have acquired general competences and to benchmark these competences against the results of the TASE model.

IV. **Research method**

This qualitative research uses survey questionnaires to measure stakeholder evaluations of 13 general competences according to three variables: (i) importance, (ii) achievement and (iii) priority. The four categories of 'none', 'weak', 'considerable', and 'strong' are used to form a Likert scale for measuring.

The survey questionnaires were administered among employers, alumni, new graduates in 2018, final-year students, lecturers, and current students of VNU. Research team members approached informants in person, at seminars and through email, to invite them to participate. The questionnaire included questions to obtain demographic information about the informants.

From February to December 2018, the survey was conducted among alumni recruiters, alumni, recent graduates in 2018, final-year students,

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[43] Haigh and Kilmartin, "Student Perceptions," 198.

[44] Tuning Academy, "Tuning Asia – South East, Second Meeting Report" (Unpublished document, Tuning Academy, University of Deusto, 2017), http://tuningasia-southeast.org/second-meeting/

[45] Tuning Education Structures in Europe, https://slideplayer.com/slide/1578662/.

lecturers, and current students in years 1, 2, and 3 at VNU, yielding a total of 818 informants (200 men and 560 women; 58 surveys were discarded because of missing values).

Table 1

Informants

		Total informants	Sex		Missing value	Total valid
			Male	Female		
Group	Employers	168	76	77	15	153
	Alumni	152	30	121	1	151
	2018 Graduates, & Final-year students	189	37	144	8	181
	Lecturer, Dean, Rector	51	32	19	0	51
	Current students	258	25	199	34	224
Total		818	200	560	58	760

Employers

The 168 employers who returned the questionnaires included 76 men (45.2%) and 77 women (45.8%); 15 (8.9%) did not specify their gender. Their ages ranged from 22 to 64 years and their occupations included managers, directors and staff.

Alumni

The 158 alumni who completed the survey included 30 men, 121 women, and 7 who did not specify their gender. Of these, 46.7% (71 people) secured jobs right after graduation, and 30.3% found a job 1-6 months after graduation; 67.1% (102 people) worked in junior positions and 8.6% (13 people) in management positions.

New graduates in 2018 and final-year students (year 4 students who would graduate in 2019)

The numbers of new graduates in 2018 and final-year students (year 4 students who would graduate in 2019) were as follows:

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A total of 189 students who graduated in 2018 and final-year students (who would graduate in 2019) participated in the survey, 37 men (19.6%), 144 women (76.2%), and 8 who did not specify their gender. The questionnaires were distributed on graduation day or in class for final-year students (year 4). Of these, 51.9% (98 students) had found jobs already.

Lecturers, deans, rector

Forty lecturers, 9 deans, 1 vice-dean and 1 vice-rector responded to the questionnaires. Their ages ranged from 24 to 61 (32 men and 19 women).

Current students

Of current students, 258 answered the questionnaires; 25 men (9.7%), 199 women (77.1%) and 34 (13.2%) who did not mention their gender. Most students were born between 1997 and 2000 (97%). Nineteen were year 1 students (7.36%), 97 year 2 (37.6%), 64 year 3 (24.8%) and 27 year 4 (10.5%); 51 (19.8%) did not specify their year of study.

In addition to the survey questionnaire, the researcher also conducted semi-structured interviews with several employers, alumni and current students to gain an in-depth understanding of the mismatch between graduates' achievement of the 13 general competences and the requirements of the workplace. Ten alumni (7 women, 3 men), 5 employers (3 women, 2 men) who are also VNU alumni, and 6 current students (3 women, 3 men) agreed to participate. The interviews were recorded and analysed using the 13 general competences as the framework for analysis.

In the questionnaires for 51 lecturers, the deans, rector and 70/152 alumni (22 men, 48 women) there was an open-ended question asking them to describe activities or stages that indicated student achievement of the competences. Among 70 alumni, 40% (28 people) found jobs right after graduation, and 22.9% (16 people) secured jobs 1-6 months after graduation. These individuals graduated between 2000 and 2019, mostly between 2015 and 2017 (2017, 12 graduates; 2015, 9 graduates; 2016, 9 graduates).

Data analysis was carried out using SPSS software at the Deusto International Tuning Academy (DITA) at the University of Deusto, Bilbao, Spain, and was financially supported by a Tuning Short-Term Visit Scholarship (http://tuningacademy.org/short-term-visits-call/).

V. **Findings**

V.1. *Mean difference is significant, ANOVA analysis, Scheffe test*

IV.1.1. Mean difference significant, ANOVA analysis, Scheffe test of the IMPORTANCE of general competences

Table 2

Multiple Comparisons of the Importance of GCs
Scheffe

Dependent Variable	(I) Group	Mean (I)	(J) Group	Mean (J)	Mean Difference (I-J)	Std. Error	Sig.
GC1 – Ability to work collaboratively and effectively in diverse contexts	2018 Graduates and final year students	3.42	Lecturer, Dean, Rector	3.71	-.285*	.091	.047
GC11 – Ability to conduct research	Lecturer, Dean, Rector	3.44	Alumni	3.07	.365*	.108	.023
GC12 – Ability to demonstrate leadership attributes	Lecturer, Dean, Rector	2.92	Employer	3.39	-.471*	.104	.000
			2018 Graduate and Final-year students	3.41	-.490*	.103	.000
			Current Student	3.31	-.390*	.099	.004

In ANOVA analysis, Scheffe test:

- For GC1 – the mean difference between the lecturer, dean, rector group and the 2018 graduates/final-year student group is significant at the 0.047 level. The highest mean value (3.71) is for the lecturer, dean, rector group; the lowest mean value (3.42) is for the graduates/ final-year student group.

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- For GC11 – the mean difference between the lecturer, dean, rector group and the alumni group is significant at the 0.023 level. The highest mean value (3.44) is for the lecturer, dean, rector group; the lowest mean value is (3.07) for the alumni group.

- For GC12 – the mean difference is significant between the lecturer, dean, rector group (1) and the three other groups; for example, between Group (1) and the employer group at the 0.000 level, between Group (1) and the 2018 graduates/final-year student group at the 0.000 level, and between Group (1) and current student group at the 0.004 level.

The highest mean value (3.41) is for the 2018 graduates/final-year student group, and the lowest mean value (2.92) is for the lecturer, dean, rector group.

IV.1.2. Mean difference, ANOVA analysis, and Scheffe test of achievement

Table 3

Multiple Comparisons of the Achievement of GCs
Scheffe

Dependent Variable	(I) Group	Mean (I)	(J) Group	Mean (J)	Mean Difference (I-J)	Std. Error	Sig.
GC1 - Ability to work collaboratively and effectively in diverse contexts	Current student	2.80	Employer	3.06	-.263*	.055	.000
			Alumni	3.11	-.314*	.056	.000
GC2 - Ability to use information and communication technology purposefully and responsibly	Current student	2.80	Employer	3.07	-.266*	.058	.000
			Alumni	3.07	-.265*	.059	.001

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Dependent Variable	(I) Group	Mean (I)	(J) Group	Mean (J)	Mean Difference (I-J)	Std. Error	Sig.
GC3 - Ability to uphold professional, moral and ethical values	Lecturer, Dean, Rector	2.96	Employer	3.27	-.308*	.088	.017
			Alumni	3.42	-.455*	.089	.000
			Current Student	3.27	-.305*	.084	.011
	Graduates in 2018 and Final-year	3.22	Alumni	3.42	-.194*	.061	.039
GC5 - Ability to communicate clearly and effectively	Current student	2.73	Employer	2.99	-.255*	.058	.001
			Alumni	3.15	-.414*	.060	.000
			2018 Graduates and Final-year	3.01	-.279*	.057	.000
GC6 - Ability to think critically, reflectively and innovatively	Current student	2.57	Employer	2.88	-.304*	.066	.000
			Alumni	3.00	-.429*	.068	.000
			2018 Graduates and Final-year	2.85	-.282*	.064	.001
GC8 - Ability to carry out lifelong learning and continual professional development	Current student	2.77	Employer	3.10	-.327*	.063	.000
			Alumni	3.07	-.294*	.064	.000
GC9 - Demonstrate problem-solving abilities	Current student	2.74	Employer	3.00	-.257*	.058	.001
			Alumni	3.04	-.297*	.059	.000
			2018 Graduates and Final-year	2.95	-.206*	.056	.009

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Dependent Variable	(I) Group	Mean (I)	(J) Group	Mean (J)	Mean Difference (I-J)	Std. Error	Sig.
GC10 - Ability to initiate, plan, organise, implement and evaluate courses of action	Current student	2.54	Employer	2.84	-.295*	.068	.001
			Alumni	2.88	-.338*	.069	.000
			2018 Graduates and Final-year	2.80	-.263*	.066	.003
GC11 - Ability to conduct research	Current student	2.50	Employer	2.91	-.404*	.071	.000
			Alumni	2.75	-.251*	.072	.016
			2018 Graduates and Final-year	2.79	-.292*	.068	.001
			Lecturer, Dean, Rector	2.84	-.341*	.107	.039
GC12 - Ability to demonstrate leadership attributes	Current student	2.53	Employer	2.95	-.416*	.068	.000
			Alumni	2.90	-.365*	.070	.000
			2018 Graduates and Final-year	2.85	-.315*	.066	.000
	Lecturer, Dean, Rector	2.57	Employer	2.95	-.381*	.108	.015
GC13 - Ability to apply knowledge in practice	Current student	2.83	Employer	3.01	-.186*	.059	.042

In general, for 11 GCs the mean difference in achievement is significant between groups (except for GC4 and GC7). In ANOVA analysis and the Scheffe test:

- GC1 – ability to work collaboratively and effectively in diverse contexts

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The mean difference between the employer group and the current student group is 0.263, significant at the 0.000 level; between alumni and current students the mean difference is 0.314, significant at the 0.000 level.

The highest mean value (3.11) is for the alumni group; the lowest mean value (2.80) is for the current student group.

- GC2 – ability to use information and communication technology purposefully and responsibly

The mean difference between the employer group and the current student group is 0.266, significant at the 0.000 level; between alumni and current students it is 0.265, significant at the 0.001 level.

The highest mean value (3.07) is for both the employer group and the alumni group. The lowest mean value (2.80) is for both the lecturer, dean, rector group and the group of current students.

- GC3 – ability to uphold professional, moral and ethical values

The mean difference between the employer group and the lecturer, dean, rector group is 0.308, significant at the 0.017 level; between the alumni and the 2018 graduates and final-year student group it is 0.194, significant at the 0.039 level; between alumni and the lecturer, dean, rector group it is 0.455, significant at the 0.000 level; and between the current student group and lecturer, dean, rector group it is 0.305, significant at the 0.011 level.

The highest mean value is 3.42 for the alumni group, and the lowest mean value (2.96) is for the lecturer, dean, rector group.

- GC5 – ability to communicate clearly and effectively

The mean difference between the employer group and the current student group is 0.255, significant at the 0.001 level; between alumni and current students it is 0.414, significant at the 0.000 level; between the 2018 graduate/final-year group and the current student group it is 0.279, significant at the 0.001 level.

The highest mean value (3.15) is for the alumni group; the lowest mean value (2.73) is for the current student group.

- GC6 – ability to think critically, reflectively and innovatively

The mean difference between the employer group and the current student group is 0.304, significant at the 0.000 level; between the alumni and current

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student group it is 0.429, significant at the 0.000 level; and between the 2018 graduates/final-year student group and the current student group it is 0.282, significant at the 0.001 level.

The highest mean value (3.00) is for the alumni group; the lowest mean value (2.57) is for the current student group.

- GC8 – ability to carry out lifelong learning and continual professional development

The mean difference between the employer group and the current student group is 0.327, significant at the 0.000 level; and between the alumni and the current student group it is 0.294, significant at the 0.000 level.

The highest mean value (3.10) is for the employer group; the lowest mean value (2.77) is for the group of current students.

- GC9 – demonstrate problem solving abilities

The mean difference between the employer group and the current student group is 0.257, significant at the 0.001 level; between the alumni and current student groups it is 0.297, significant at the 0.000 level; between the 2018 graduate/final-year student group and current student group it is 0.206, significant at the 0.009 level.

The highest mean value (3.04) is for the alumni group; the lowest mean value (2.74) is for the current student group.

- GC10 – ability to initiate, plan, organise, implement and evaluate courses of action

The mean difference between the employer group and the current student group is 0.295, significant at the 0.001 level; between the alumni and current student groups it is 0.338, significant at the 0.000 level; between the 2018 graduates/final-year student group and the current student group it is 0.263, significant at the 0.003 level.

The highest mean value (2.88) is for the alumni group; the lowest mean value (2.54) is for the current student group.

- GC11 – ability to conduct research

The mean difference between the employer group and the current student group is 0.404, significant at the 0.000 level; between the alumni and current

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student groups it is 0.251, significant at the 0.016 level; between the 2018 graduate/final-year student group and the current student group it is 0.292, significant at the 0.001 level; between the lecturer, dean, rector group and the current student group it is 0.341, significant at the 0.039 level.

The highest mean value (2.91) is for the employer group; the lowest mean value (2.50) is for the current student group.

- GC12 – ability to demonstrate leadership attributes

The mean difference between the employer group and the lecturer, dean, rector group is 0.381, significant at the 0.015 level; between the employer group and the current student group it is 0.416, significant at the 0.000 level; between the alumni and current student groups it is 0.365, significant at the 0.000 level. The mean difference between the 2018 graduate/final-year student group and the current student group is 0.315, significant at the 0.000 level.

The highest mean value (2.95) is for the employer group. The lowest mean value (2.53) is for the current student group.

- GC13 – ability to apply knowledge in practice

The mean difference between the employer group and the current student group is 0.186, significant at the 0.042 level.

The highest mean value (3.01) is for the employer group; the lowest mean value (2.83) is for the current student group.

Since the TASE project did not include a group of recent graduates, and because a relatively small group of lecturers, deans, and rectors participated in the current research, the following sections compare the findings from the surveys among employers, alumni and current students to the findings from similar groups in the TASE project.

V.2. *Employer rating and ranking*

IV.2.1. Importance - Employers

Employers of VNU graduates rated the importance of 13 GCs at a higher level than they did graduates' achievement of them.

Employers of VNU graduates ranked all GCs on a lower level of importance than did employers for all areas of the TASE project.[46] Employers

[46] Tuning Academy, "Tuning Asia – South East, Second Meeting Report," 20.

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of both groups rated GC3 (the ability to uphold professional, moral and ethical values) and GC13 (the ability to apply knowledge in practice) as the first and second most important competences, respectively. Both GC7 (the ability to understand, value and respect diversity and multiculturalism) and GC11 (the ability to conduct research) were the two least important in the ratings of the two groups of employers.

However, while employers of VNU graduates rated GC8 (the ability to engage in lifelong learning and continual professional development) and GC1 (the ability to work collaboratively and effectively in diverse contexts) as the seventh and eighth most important abilities, respectively, TASE employers rated them in third and fourth place.

GC9 was rated fourth in importance by employers of VNU graduates, but seventh by TASE employers.

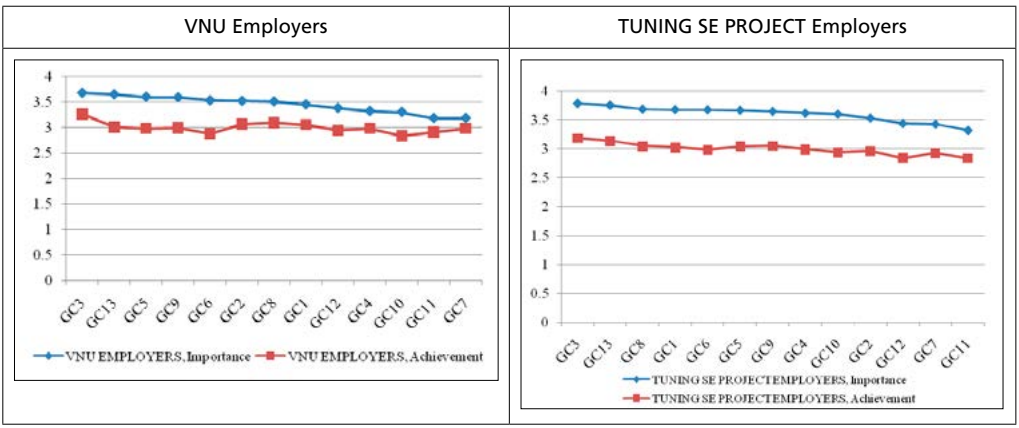

Figure 1

Employers - Ratings

Information generated from *"Tuning Asia – South East, Second meeting Report"*[47]

In the 4 Likert scale categories (1 = none, 2 = weak, 3 = considerable, 4 = strong), VNU employers rated all 13 GCs as of great importance (4, strong) – higher than considerable (3). Of highest importance was GC3 (ability to uphold professional, moral and ethical values) (mean = 3.69), second was

[47] Tuning Academy, "Tuning Asia – South East, Second meeting Report," http://tuningasia-southeast.org/second-meeting/.

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GC13 (ability to apply knowledge in practice) (mean = 3.66), lowest were GC11 (ability to conduct research) and GC7 (ability to understand, value, and respect diversity and multiculturalism) (mean for both = 3.19).

Table 4

Employers of VNU graduates – RATING vs RANKING

Employers of VNU graduates rate importance of GCs	Employers of VNU graduates rank priority of GCs (see details in the Annex)	Employers of VNU graduates rate achievement of GCs
1st - GC3, ability to uphold professional, moral and ethical values	1st - GC13, ability to apply knowledge into practice	1st - GC3, ability to uphold professional, moral and ethical values
2nd - GC13, ability to apply knowledge in practice	2nd - GC5, ability to communicate clearly and effectively	2nd - GC8, ability to carry out lifelong learning and continual professional development
3rd - GC5, ability to communicate clearly and effectively	3rd - GC1, ability to work collaboratively and effectively in diverse contexts	3rd - GC2, ability to use information and communication technology purposefully and responsibly
4th - GC9, demonstrate problem-solving abilities	4th - GC9, demonstrate problem-solving abilities	4th - GC1, ability to work collaboratively and effectively in diverse contexts
5th - GC6, ability to think critically, reflectively and innovatively	5th - GC3, ability to uphold professional, moral and ethical values	5th - GC13, ability to apply knowledge in practice
6th - GC2	6th - GC8	6th - GC9
7th - GC8	7th - GC2	7th - GC4
8th - GC1	8th - GC12	8th - GC5
9th - GC12	9th - GC6	9th - GC7
10th - GC4	10th - GC11	10th - GC12
11th - GC10	11th - GC10	11th - GC11
12th - GC11	12th - GC4	12th - GC6
13th - GC7	13th - GC7	13th - GC10

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Employers of VNU graduates rated GC3 (the ability to uphold professional, moral and ethical values) as first in importance, the fifth priority, and in first place for graduate achievement. They rated GC5 (the ability to communicate clearly and effectively) as third in importance and the second priority but rated it eighth in graduate achievement. GC9 (demonstrate problem-solving abilities) they ranked fourth in importance, the fourth priority, but sixth on the scale of graduate achievement. GC6 (the ability to think critically, reflectively and innovatively) they rated fifth in importance, the ninth priority, but only 12th in graduate achievement.

VNU employers rated GC10 (the ability to initiate, plan, organise, implement and evaluate a course of action) and GC11 (the ability to conduct research) at a low level of importance, a low priority, and low on the scale of graduate achievement as well.

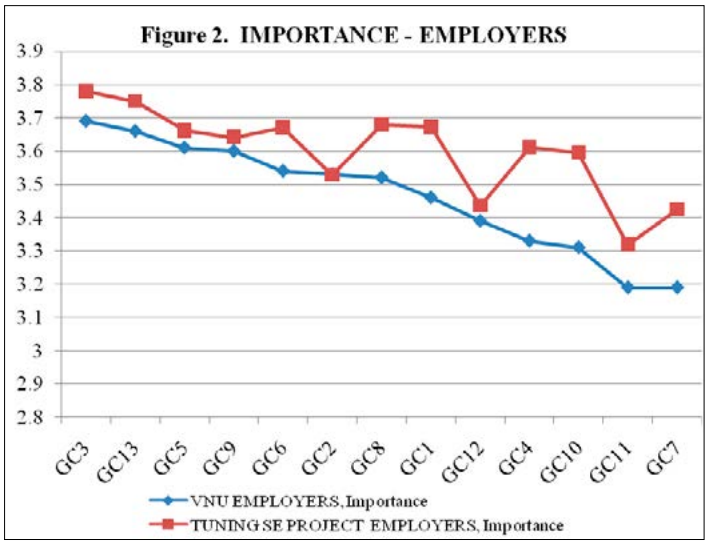

Figure 2

Importance – Employers

IV.2.2. Achievement - Employers

Both VNU employers and Tuning-SE project employers rated graduates' achievement of GC3 (the ability to uphold professional, moral and ethical values) in first place.

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Employers of VNU graduates rated VNU graduate achievement of GC13, GC9, GC5, GC6, and GC10 at lower levels than did TASE employers, and rated VNU graduate achievement of GC3, GC8, GC2, GC1, GC7, GC12, GC11 at higher levels than did TASE-project employers.

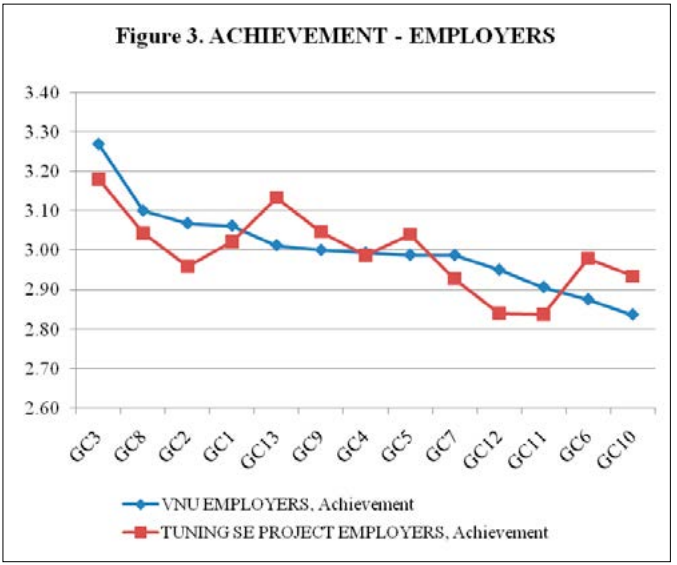

Figure 3

Achievement – Employers

VNU employers rated only six general competences in the "considerable" category of achievement, and the other seven GCs lower. Just as they rated GC3 as of highest importance, they also considered it the graduates' highest achievement (mean = 3.27). GC8 (ability to engage in lifelong learning and continual professional development) was rated the second to highest achievement (mean = 3.10). GC10 (ability to initiate, plan, organise, implement and evaluate courses of action) was rated lowest (mean = 2.83), and GC6 (ability to think critically, reflectively and innovatively) was considered the second to lowest achievement (mean = 2.88), though it was rated as fifth in importance (mean = 3.54).

Employers of VNU graduates rated GC13 as second in importance but rated graduate achievement of this competence in fifth place. GC8 they ranked seventh in importance, however, and graduates' achievement of it in second place. GC11 was ranked 13th in importance and 10th in graduate

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achievement. They rated GC10 as 10th in importance and 13th on level of achievement.

V.3. *Students – rating and ranking*

IV.3.1. Importance - Student

VNU students rated the importance of all GCs at a higher level than their achievement of them. This is similar to student ratings in the Tuning project.

Both VNU Students and TASE project students ranked GC13 as highest in importance.

VNU students rated GC7 at the lowest level, which is similar to the employers' rating. Meanwhile, Tuning-SE project students rated GC11 at the lowest level.

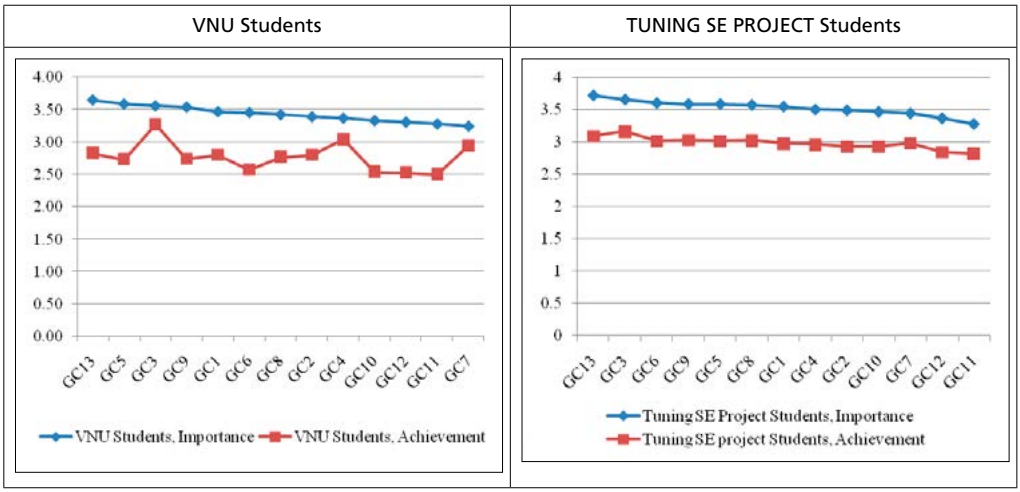

Figure 4
Students - Rating

VNU students rated all GCs at a lower level of importance than did students in the Tuning-SE project.[48]

[48] Tuning Academy, "Tuning Asia – South East, Second Meeting Report," 22.

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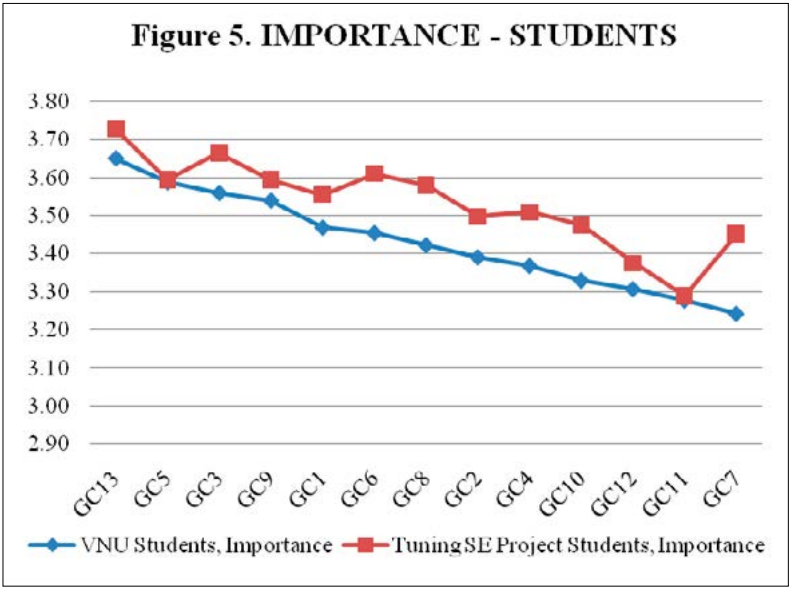

Figure 5
Importance - Students

Like VNU employers, VNU students rated all 13 GCs as of high importance – higher than the "considerable" category. Highest was GC13 (ability to apply knowledge in practice) (mean = 3.65). Second was GC5 (ability to communicate clearly and effectively) (mean = 3.59), lowest was GC7 (ability to understand, value, and respect diversity and multiculturalism) (mean = 3.24), and second to lowest was GC11 (ability to conduct research) (Mean = 3.28).

IV.3.2. Achievement - Students

VNU students ranked only two general competences in the "considerable" category of achievement, and the other 11 competences lower. GC3 was rated as the highest achievement (mean = 3.27), GC4 (ability to demonstrate responsibility and accountability towards society and environment) was second to highest (Mean = 3.04). GC11 (ability to conduct research) was rated lowest (Mean = 2.50), and GC12 (ability to demonstrate leadership attributes) was second to lowest (mean = 2.53).

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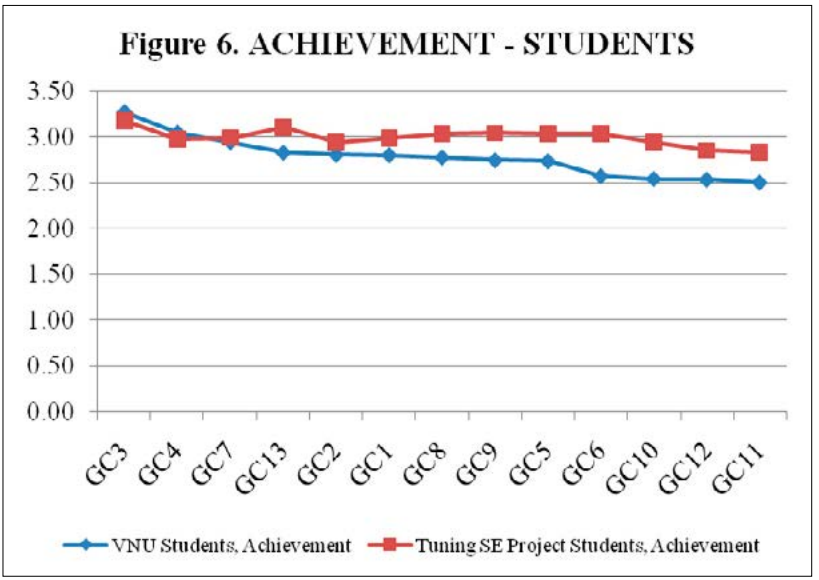

Figure 6

Achievement - Students

VNU student ratings of their achievement of 11 general competences (except for GC3 and GC4) were lower than those of students in the TASE project. The widest gap was for GC6, followed by GC10. Both student groups (VNU and TASE project) rated their achievement of GC3 at the highest level and GC11 at the lowest. VNU students rated their achievement of GC13 in fourth place. Meanwhile, TASE project students rated GC13 as second highest in their achievement. However, both groups rated GC13 as most important.

VNU students rated GC5 as second in importance, first priority, but ninth in their achievement; GC9 as fourth in importance, third priority, but eighth in their achievement.

VNU students rated GC13 as first in importance, second priority, and fourth in their achievement. They ranked GC3 as third in importance, sixth priority, and first in their achievement.

VNU students' rating for both GC7 and GC4: low in importance but high in their achievement.

GC7: 13th in importance, third in their achievement.

GC4: ninth in importance, second in achievement.

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Table 5

VNU students – RATING vs RANKING

VNU students rate importance of GCs	VNU students rank priority of GCs (see details in Annex)	VNU students rate achievement of GCs
1st - GC13, ability to apply knowledge in practice	1st - GC5, ability to communicate clearly and effectively	1st - GC3, ability to uphold professional, moral and ethical values
2nd - GC5, ability to communicate clearly and effectively	2nd - GC13, ability to apply knowledge in practice	2nd - GC4, ability to demonstrate responsibility and accountability towards society and environment
3rd - GC3, ability to uphold professional, moral and ethical values	3rd - GC9, demonstrate problem-solving abilities	3rd - GC7, ability to understand, value, and respect diversity and multiculturalism
4th - GC9, demonstrate problem solving abilities	4th - GC6, ability to think critically, reflectively and innovatively	4th - GC13, ability to apply knowledge in practice
5th - GC1, ability to work collabouratively and effectively in diverse contexts	5th - GC1, ability to work collabouratively and effectively in diverse contexts	5th - GC2, ability to use information and communication technology purposefully and responsibly
6th - GC6	6th - GC3	6th - GC1
7th - GC8	7th - GC8	7th - GC8
8th - GC2	8th - GC2	8th - GC9
9th - GC4	9th - GC10	9th - GC5
10th - GC10	10th - GC12	10th - GC6
11th - GC12	11th - GC11	11th - GC10
12th - GC11	12th - GC4	12th - GC12
13th - GC7	13th - GC7	13th - GC11

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V.4. *Alumni – rating and ranking*

IV.4.1. Importance - Alumni

As with the results of the various Tuning projects, VNU alumni rated the importance of all GCs more highly than their achievement of them. Both groups of alumni rated GC13 (ability to apply knowledge in practice) as of greatest importance, a rating similar to that of the students.

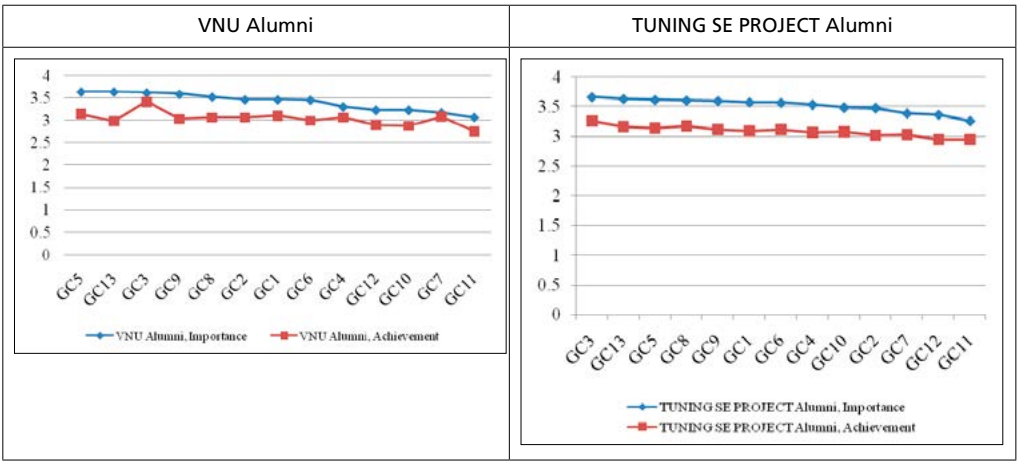

Figure 7
Alumni - Ratings

VNU alumni rated 12 general competences at a lower level of importance than alumni in the Tuning-SE Project did,[49] except for GC5 (ability to communicate clearly and effectively). The widest gaps are for GC4, GC10, GC7 and GC11:

- GC4 – ability to demonstrate responsibility and accountability towards society and environment
- GC7 – ability to understand, value, and respect diversity and multiculturalism
- GC10 – ability to initiate, plan, organise, implement and evaluate courses of action

[49] Tuning Academy, "Tuning Asia – South East, Second Meeting Report," 24.

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- GC11 – ability to conduct research

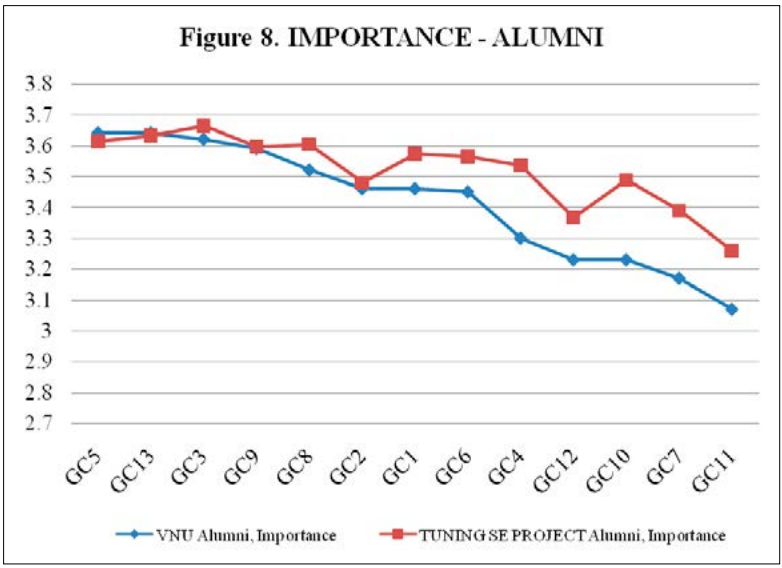

Figure 8
Importance - Alumni

Like VNU employers and VNU students, VNU alumni also rated all 13 GCs as of high importance – higher than the "considerable" category (4). Ranked as of highest importance were GC13 (ability to apply knowledge in practice) and GC5 (ability to communicate clearly and effectively) (mean for both = 3.64). Lowest was GC11 (ability to conduct research) (mean = 3.07), and GC7 (ability to understand, value, and respect diversity and multiculturalism) was ranked second to lowest (mean = 3.17).

IV.4.2. Achievement - Alumni

VNU alumni rating – high importance but low achievement

VNU alumni rated GC13 and GC9 high in importance but low in their achievement:

- GC13 – ability to apply knowledge in practice (second in importance, 10th in their achievement)

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- GC9 – ability to demonstrate problem-solving abilities (fourth in importance, eighth in their achievement)

VNU alumni rating – high importance and high achievement

VNU alumni rated both CG3 and GC5 as high in importance and achievement:

- GC3 – ability to uphold professional, moral and ethical values (third in importance, first in their achievement)
- GC5 – ability to communicate clearly and effectively (first in importance, second in their achievement)

VNU alumni rating – low in importance and low in achievement

VNU alumni rated CG12, GC10 and GC11 as both low in importance and in their achievement:

- GC12 – ability to demonstrate leadership attributes (10th in importance, 11th in their achievement)

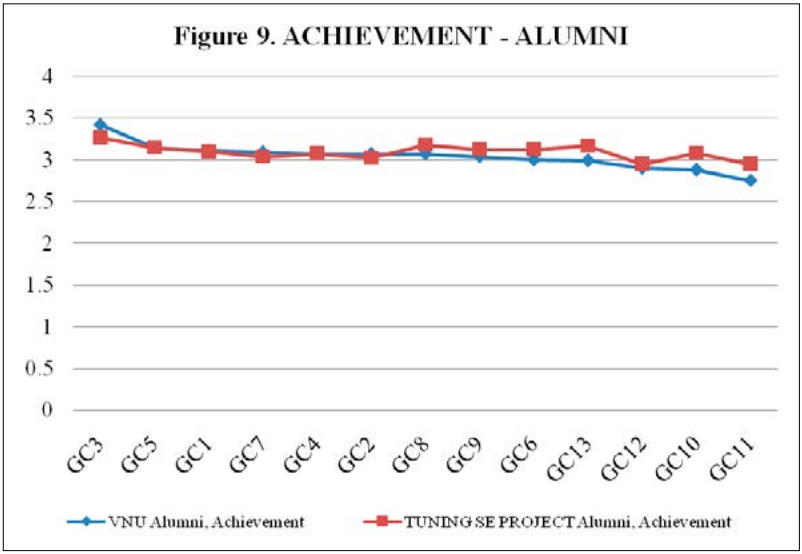

Figure 9

Achievement - Alumni

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- GC10 – ability to initiate, plan, organise, implement and evaluate courses of action (11th in importance, 12th in their achievement)
- GC11 – ability to conduct research (13th in importance, 13th in their achievement)

VNU alumni gave a similar rating to their achievement of GCs as did alumni of the Tuning-SE project.

Like the rating given by employers and students, alumni rated their achievement of GC3 at the highest level.

Both alumni and students rated their achievement of GC11 at the lowest level.

VNU alumni rated nine general competences in the "considerable" (4) category of achievement, and the other four GCs lower. GC3 was rated as their highest achievement (mean = 3.42), GC5 (ability to communicate clearly and effectively) was second (mean = 3.15). GC11 (ability to conduct research) was rated lowest (mean = 2.75), and GC10 (ability to initiate, plan, organise, implement and evaluate courses of action) was second to lowest in achievement (mean = 2.88).

Table 6

VNU alumni – RATING vs RANKING

VNU alumni rate importance of GCs	VNU alumni rank priority of GCs (see details in the Annex)	VNU alumni rate achievement of GCs
1st - GC5, ability to communicate clearly and effectively	1st - GC5, ability to communicate clearly and effectively	1st - GC3, ability to uphold professional, moral and ethical values
2nd - GC13, ability to apply knowledge in practice	2nd - GC9, demonstrate problem-solving abilities	2nd - GC5, ability to communicate clearly and effectively
3rd - GC3, ability to uphold professional, moral and ethical values	3rd - GC13, ability to apply knowledge in practice	3rd - GC1, ability to work collaboratively and effectively in diverse contexts
4th - GC9, demonstrate problem-solving abilities	4th - GC3, ability to uphold professional, moral and ethical values	4th - GC7, ability to understand, value, and respect diversity and multiculturalism

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VNU alumni rate importance of GCs	VNU alumni rank priority of GCs (see details in the Annex)	VNU alumni rate achievement of GCs
5th - GC8, ability to carry out lifelong learning and continual professional development	5th - GC6, ability to think critically, reflectively and innovatively	5th - GC4, ability to demonstrate responsibility and accountability towards society and environment
6th - GC2	6th - GC1	6th - GC2
7th - GC1	7th - GC8	7th - GC8
8th - GC6	8th - GC2	8th - GC9
9th - GC4	9th - GC12	9th - GC6
10th - GC12	10th - GC10	10th - GC13
11th - GC10	11th - GC11	11th - GC12
12th - GC7	12th - GC4	12th - GC10
13th - GC11	13th - GC7	13th - GC11

In general, employers, students and alumni of VNU and of the Tuning-SE project rated the importance of all GCs more highly than graduate achievement of them. Employers, students and alumni of VNU and of the Tuning-SE project rated graduates' achievement of GC3 (ability to uphold professional, moral and ethical values) at the highest level. Alumni and students rated graduates' achievement of GC11 (ability to conduct research) at the lowest level.

V.5. *Semi-structured interviews*

The interviews with current students and alumni elicited their concern about "showing initiative", "planning", and "organising". Though this competence was essential for carrying out their tasks in the workplace, their university lessons included no activities to develop this competence.

IV.5.1. Current students' comments on the importance of the general competences and their achievement of them

In the semi-structured interviews, informant 1 (male, alumnus, school teacher, 25 years old) said he understood the importance of showing initiative

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in his work, but he rated his performance of this competence poorly. Assuming that it was closely linked with personal aptitude, he saw this competence as an attribute of leadership and said that he did not consider himself a leader in his class because he had not initiated or organised any activities. Therefore, he did not believe he had achieved this competence satisfactorily.

> *My job requires me to show initiative, but I failed to do so, for example, by organising an excursion or field trip. If I had done so, my students would be happier about going to school. I think I am poor at this competence. When I was studying at the university, there was almost no activity to develop this competence. I was not a leader in my class and did not organise anything.* (Informant 1, male, alumnus, teacher, 25 years old)

As a teacher, informant 1 needed to train his students in the attributes of citizenship, disciplinary knowledge, and practical application skills but he did not feel competent to initiate new ideas. In the long run, his students would become less competent in these skills and attributes.

Informant 2 (female, 37 years old), who was working on her second degree, shared similar feelings of lack of confidence about her performance of this competence. Her university classes were scheduled for evenings and weekends, so there were no extra-curricular activities for students.

> *I am least confident about competence 10. I am doing my second degree but there are no activities at the university to develop this competence.* (Informant 2, female, current second degree student, 37 years old)

Like Informant 1, this woman was not satisfied with her GC10 (ability to initiate, plan, organise, implement and evaluate courses of action). This weakness was also clear in the way she insisted that learning activities should develop these skills. As Barrie argued, the attribute of personal and intellectual autonomy and skills in application belong to his "translation" level of generic attributes, which are transferable and transcend disciplinary boundaries.[50] Since informant 2 was in her second degree, she should be competent in these skills. Her earlier education had not trained her ability to initiate, plan, organise, implement and evaluate courses of action.

Other informants also thought that there were ways to develop this competence, such as doing practicums, problem-solving activities or project work. They highlighted the fact that most of the time at university, they learned from lecturers in class, so that the lecturers' teaching approach was the main and almost sole avenue for developing this competence.

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[50] Barrie, "Academics' understandings," 159.

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IV.5.2. Employer and alumni comments on the relative importance of the general competences and graduates' achievement of them

To compensate for the limitations of the survey questionnaire, which did not allow employers to explain their evaluation in detail, the researcher also approached some employers for semi-structured interviews. The interviewees maintained that GC6 (ability to think critically, reflectively and innovatively) was essential, as it influenced the achievement of other competences, such as GC7 (ability to understand, value, and respect diversity and multiculturalism) and GC13 (ability to apply knowledge in practice).

For example, Informant 3 (employer, 40 years old, manager, and also an alumnus of VNU), recalled:

> *Critical thinking and creativity are very important because they help workers reduce their mistakes. Critical analysis of any problem reveals the real causes of error. For example, a traffic accident cannot be explained properly without critical thinking. In an organisation, one must ask questions. While studying at school, this competence is developed through presenting situations for solving in class or at home. These exercises help students develop many different abilities, including the ability to understand, value, and respect diversity and multiculturalism, cultural values and the ability to apply knowledge in practice.* (Informant 3, male, alumnus, employer, manager, 40 years old)

Informant 3 saw the necessity of critical thinking and how this ability developed. From his experience, he could deduce the cause and effect relationship between this general attribute and others. His ability to think critically may also explain why he was promoted to a management role.

Other alumni confirmed that they had learnt these transferable skills through extra-curricular activities. For example, Informant 2 remarked that *"these transferable skills are well developed not only through lecturers' lessons, but mostly through work practicums and the professional activities of various types of student club"*.

Once again, Informant 2 showed that she could not learn the "translation" attributes through teaching and learning activities. She developed them by carrying out the instructions, not just listening to them. Her route to learning was the way adults learn new skills. Her programme for second degree learners was not tailored to take advantage of the experience of learners, thus did not achieve the expected outcome.

Lecturers answering the open-ended questions suggested similar activities to develop GC6, such as:

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- Writing scientific research reports, or a final thesis
- Extra-curricular and foreign language activities
- Student discussions in class
- Teachers encouraging students to criticise and ask questions
- Students making presentations on social issues
- Doing homework or group work
- Attending classes in soft skills
- University organised scientific club
- Students attending seminars

Employers as well as alumni were very concerned about graduates' critical thinking, initiative and planning skills because these competences helped them to adapt to strange new contexts, acquire new knowledge and skills, and apply theory in practice. Alumni and lecturers agreed that these competences were mainly developed through extra-curricular activities, and non-traditional teaching and learning approaches.

VI. **Discussion**

In general, employers, students and alumni of VNU and of the Tuning-SE project rated the importance of all GCs more highly than graduates' achievement of them. For both projects, GC3 (ability to uphold professional, moral and ethical values) was the most important competence and GC13 (ability to apply knowledge in practice) was the second, while GC7 (ability to understand, value, and respect diversity and multiculturalism) and GC11 (ability to conduct research) were considered the two least important competences.

For both projects, employers, students and alumni of VNU and of the Tuning-SE project thought graduate achievement was highest for GC3 (ability to uphold professional, moral and ethical values). Alumni and students rated graduate achievement of GC11 (ability to conduct research) at the lowest level. According to the rating of employers, VNU graduates' achievement of GC5 (ability to communicate clearly and effectively), GC6 (ability to think critically, reflectively and innovatively), GC9 (demonstrate problem-solving abilities), GC10 (ability to initiate, plan, organise, implement and evaluate courses of action), and GC13 (ability to apply knowledge in practice) was lower than for TASE graduates. The largest gap was for GC13, GC6 and GC10.

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Also in the rating of employers, VNU graduate achievement of GC1 (ability to work collaboratively and effectively in diverse contexts), GC2 (ability to use information and communication technology purposefully and responsibly), GC3 (ability to uphold professional, moral and ethical values), GC7 (ability to understand, value, and respect diversity and multiculturalism), GC8 (ability to carry out lifelong learning and continual professional development), GC11 (ability to conduct research), and GC12 (ability to demonstrate leadership attributes) was higher than for TASE graduates. The largest gap was for GC2 and GC12.

Specifically, employers of VNU graduates believed the latter's lifelong learning competence was good. VNU graduates' achievement of GC8 (ability to carry out lifelong learning and continual professional development) was rated second, though it only rated seventh in importance. However, although competence in communication, problem solving, and critical thinking is important, it rated low in achievement. VNU graduate achievement of GC5 (ability to communicate clearly and effectively) was ranked eighth by employers, and GC9 (demonstrate problem solving abilities) sixth.

Competence in critical thinking ranked last and lowest in achievement. VNU graduates' achievement of GC6 (ability to think critically, reflectively and innovatively) was rated twelfth by employers. It is worth noting that GC10 (ability to initiate, plan, organise, implement and evaluate courses of action) and GC11 (ability to conduct research) were not considered to be of great importance in employers' evaluation, nor did achievement in this area rate highly.

Like the employers, both VNU and TASE students rated the importance of general competences more highly than their achievement of them. VNU students rated all GCs at a lower level of importance than Tuning-SE Project[51] students did. The widest gap was for GC7, followed by GC6, GC8, GC4, GC10, and GC2. Both VNU and Tuning-SE project students thought that GC3 (ability to uphold professional, moral and ethical values) was their best competence, and that GC11 (ability to conduct research) was lowest in their achievement. Moreover, employers thought GC11 was less important than the students did.

Students thought they were fairly good at applying knowledge in practice, and this was the most important competence in their evaluation. VNU students rated GC13 (ability to apply knowledge in practice) as fourth highest in their achievement, while Tuning-SE project students rated it second. They all thought that GC13 was the most important competence.

[51] Tuning Academy, "Tuning Asia – South East, Second Meeting Report," 22.

In summary, VNU student ratings of their achievement of all 11 GCs (GC7, GC13, GC2, GC1, GC8, GC9, GC5, GC6, GC10, GC12, GC11) were lower than those of Tuning-SE project students. The widest gap was for GC6 (ability to think critically, reflectively and innovatively), followed by GC10 (ability to initiate, plan, organise, implement and evaluate course of actions).

Like the employers and students, VNU alumni rated the importance of all GCs more highly than their achievement of them. VNU alumni rated 12 GCs at a lower level of importance than did alumni in the Tuning-SE project for all competences, except for GC5 (ability to communicate clearly and effectively). The widest gaps were for GC4 (ability to demonstrate responsibility and accountability towards society and environment), GC7 (ability to understand, value, and respect diversity and multiculturalism), GC10 (ability to initiate, plan, organise, implement and evaluate courses of action), and GC11 (ability to conduct research). Both groups of alumni rated GC13 (ability to apply knowledge in practice) as of greatest importance, a rating similar to that of the students.

The findings of the current research were similar to those of the Higher Education and Graduate Employment in Europe research project,[52] which indicated that in the focused cognitive domains of their majors, graduates felt better prepared for their job than the job actually required. However, graduates' socio-communicative skills, values and orientations did not meet the requirements of the world of work.[53] New graduates were not adequately prepared even for entry-level positions.[54]

We found little evidence to substantiate the view that there is a gap between employers' expectations and VNU graduates' evaluation of their achievement of the 13 general competences. Both employers and VNU alumni held a similar evaluation of graduate achievement of those competences. There was no significant difference in the mean values of the importance and achievement of the general competences in the evaluations of the employer and alumni groups.

However, we found positive evidence that the evaluations of current students about their achievement of 10 out of 13 general competences (all except for GC3, GC4, GC7) were significantly lower than employers' judgment of graduate achievement of the same competences. This result is similar to the findings of Lowden, Hall, Elliot, and Lewin, that students' broader skills and attributes, including team-working, communication,

[52] Schomburg and Teichler, *Higher Education,* 99.

[53] Schomburg and Teichler, ibid.

[54] Mourshed, Farrell, and Barton, *Education to Employment,* 18.

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leadership, critical thinking and problem solving, should receive greater attention.[55]

An ability to apply knowledge in practice enables graduates to make use of, or apply, disciplinary knowledge. This includes linked personal attributes, cognitive abilities and skills of application. Barrie states that these generic attributes transcend disciplinary boundaries, even if they were initially developed within disciplinary contexts. Once developed, they provide a reusable framework that enables students/graduates to acquire and shape new knowledge as required – even in the context of other disciplines.[56]

VII. **Conclusion**

The research findings demonstrate that employers, alumni, and students evaluated the importance of 13 general competences more highly than graduate achievement of them. Employers of VNU graduates gave the highest priority to such competences as the ability to communicate clearly and effectively, demonstrate problem-solving abilities, and the ability to apply knowledge in practice. VNU graduates were also rated worse than their peers in the TASE project in their ability to think critically, reflectively and innovatively, and in their ability to initiate, plan, organise, implement and evaluate courses of action. These include transferable skills, such as interactive attributes, communication skills, interpersonal skills and team working; personal attributes, such as intellect and problem solving, analytic, critical and reflective ability, willingness to learn and continue learning, flexibility, adaptability, and risk-taking; and self-management skills that are essential for graduates to enter the workplace effectively.[57] The curriculum should focus on developing general competences during the first semesters, so that students can apply these abilities to acquire important knowledge and skills more effectively.

VNU graduates rated best for their ability to uphold professional, moral and ethical values but worst for the ability to initiate, plan, organise, implement and evaluate courses of action. In this context, it might be worth taking into account alumni comments that extra-curricular activities help

[55] Kevin Lowden, Stuart Hall, Dely Elliot, and Jon Lewin, *Employers' Perceptions of the Employability Skills of New Graduates* (London: Edge Foundation, 2011), 24.

[56] Barrie," Understanding," 229-30.

[57] Harvey, Moon, Geall, and Bower, *Graduates' Work*, 43.

them become creative; develop problem-solving skills, teamwork, and communication skills.

The research also raises the concern that the students evaluated their achievement of most general competences as relatively low. Most of these students were in their second or third years of a four-year degree programme. It would be necessary for future research to investigate what activities could develop these general competences during the final terms, when major subjects focused solely on advancing disciplinary knowledge and skills.

The implication from the research findings is that the curriculum should integrate general competence training throughout the whole process, in every subject and activity – in and out of class. In particular, the focus should be placed on developing these general competences during the first semesters to support learners' acquisition of new knowledge and skills during their university study.

The findings of the current research also show the benefits of the interview technique in exploring the perspectives of employers, who were rich in information but lacked the time to participate in the survey questionnaire. Interviews can add valuable insight to the information gained from short answers or multiple choices in the survey questionnaire. Future research with a similar purpose should consider a good balance between qualitative and quantitative methods.

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Annexes

A) Annex 1

Employers rating

	VNU Employers	VNU Employers	TASE project Employers	TASE project Employers
Description	Importance	Achievement	Importance	Achievement
GC3 Ability to uphold professional, moral and ethical values	3.69	3.27	3.7812	3.1805
GC13 Ability to apply knowledge in practice	3.66	3.01	3.7510	3.1332
GC5 Ability to communicate clearly and effectively	3.61	2.99	3.6628	3.0401
GC9 Demonstrate problem-solving abilities	3.60	3.00	3.6422	3.0462
GC6 Ability to think critically, reflectively and innovatively	3.54	2.88	3.6712	2.9791
GC2 Ability to use information and communication technology purposefully and responsibly	3.53	3.07	3.5292	2.9584
GC8 Ability to carry out lifelong learning and continual professional development	3.52	3.10	3.6806	3.0439
GC1 Ability to work collabouratively and effectively in diverse contexts	3.46	3.06	3.6739	3.0218
GC12 Ability to demonstrate leadership attributes	3.39	2.95	3.4362	2.8394
GC4 Ability to demonstrate responsibility and accountability towards society and environment	3.33	2.99	3.6119	2.9871
GC10 Ability to initiate, plan, organise, implement and evaluate courses of action	3.31	2.84	3.5960	2.9339
GC11 Ability to conduct research	3.19	2.91	3.3185	2.8367
GC7 Ability to understand, value, and respect diversity and multiculturalism	3.19	2.99	3.4246	2.9270

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B) Annex 2

Student ratings

	VNU Students	VNU Students	TASE project Students	TASE project Students
	Importance	Achievement	Importance	Achievement
GC13 Ability to apply knowledge in practice	3.65	2.83	3.7282	3.0949
GC5 Ability to communicate clearly and effectively	3.59	2.73	3.5934	3.0245
GC3 Ability to uphold professional, moral and ethical values	3.56	3.27	3.6641	3.1688
GC9 Demonstrate problem-solving abilities	3.54	2.74	3.5940	3.0330
GC1 Ability to work collaboratively and effectively in diverse contexts	3.47	2.8	3.5547	2.9811
GC6 Ability to think critically, reflectively and innovatively	3.45	2.57	3.6101	3.0233
GC8 Ability to carry out lifelong learning and continual professional development	3.42	2.77	3.5802	3.0298
GC2 Ability to use information and communication technology purposefully and responsibly	3.39	2.8	3.4971	2.9350
GC4 Ability to demonstrate responsibility and accountability towards society and environment	3.37	3.04	3.5084	2.9697
GC10 Ability to initiate, plan, organise, implement and evaluate courses of action	3.33	2.54	3.4741	2.9355
GC12 Ability to demonstrate leadership attributes	3.31	2.53	3.3746	2.8469
GC11 Ability to conduct research	3.28	2.5	3.2884	2.8260
GC7 Ability to understand, value, and respect diversity and multiculturalism	3.24	2.94	3.4517	2.9854

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C) Annex 3

Alumni ratings

	VNU Alumni	VNU Alumni	TASE project Alumni	TASE project Alumni
	Importance	Achievement	Importance	Achievement
GC5 Ability to communicate clearly and effectively	3.64	3.15	3.6149	3.1412
GC13 Ability to apply knowledge in practice	3.64	2.99	3.6328	3.1669
GC3 Ability to uphold professional, moral and ethical values	3.62	3.42	3.6647	3.2606
GC9 Demonstrate problem-solving abilities	3.59	3.04	3.5971	3.1204
GC8 Ability to carry out lifelong learning and continual professional development	3.52	3.07	3.6042	3.1744
GC2 Ability to use information and communication technology purposefully and responsibly	3.46	3.07	3.4798	3.0201
GC1 Ability to work collaboratively and effectively in diverse contexts	3.46	3.11	3.5742	3.0951
GC6 Ability to think critically, reflectively and innovatively	3.45	3.00	3.5658	3.1185
GC4 Ability to demonstrate responsibility and accountability towards society and environment	3.30	3.07	3.5361	3.0688
GC12 Ability to demonstrate leadership attributes	3.23	2.90	3.3683	2.9476
GC10 Ability to initiate, plan, organise, implement and evaluate courses of action	3.23	2.88	3.4887	3.0786
GC7 Ability to understand, value, and respect diversity and multiculturalism	3.17	3.09	3.3901	3.0311
GC11 Ability to conduct research	3.07	2.75	3.2599	2.9510

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D) Annex 4

VNU Employers' rankings of the priority of general competences
(Weight of ranking: 1st priority = 5 points; 2nd priority = 4 points;
3rd priority = 3 points; 4th priority = 2 points; 5th priority = 1 point)

Employer ranking of the priority of general competences (number of votes)							Standardised
N = 168		1st priority	2nd priority	3rd priority	4th priority	5th priority	
		(1)	(2)	(3)	(4)	(5)	(1*5+2*4+3*3+ 4*2+5*1)
1	Ability to work collaboratively and effectively in diverse contexts	25	17	9	8	12	(3rd) 248
2	Ability to use information and communication technology purposefully and responsibly	9	10	9	23	13	(7th) 171
3	Ability to uphold professional, moral and ethical values	19	16	11	14	9	(5th) 229
4	Ability to demonstrate responsibility and accountability towards society and environment	3	3	3	7	9	(12th) 59
5	Ability to communicate clearly and effectively	12	27	19	16	10	(2nd) 267
6	Ability to think critically, reflectively and innovatively	10	7	14	12	13	(9th) 157
7	Ability to understand, value, and respect diversity and multiculturalism	1	0	3	2	3	(13th) 21
8	Ability to carry out lifelong learning and continual professional development	16	14	19	6	11	(6th) 216
9	Demonstrate problem solving abilities	17	14	18	19	12	(4th) 245
10	Ability to initiate, plan, organise, implement and evaluate courses of action	5	7	14	4	6	(11th) 109
11	Ability to conduct research	6	16	6	9	6	(10th) 136
12	Ability to demonstrate leadership attributes	6	10	15	17	21	(8th) 170
13	Ability to apply knowledge in practice	26	14	13	16	27	(1st) 284

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E) Annex 5

VNU student rankings of the priority of general competences

Student rankings of the priority of general competences (number of votes)							Standardised
N = 258		1st priority	2nd priority	3rd priority	4th priority	5th priority	
		(1)	(2)	(3)	(4)	(5)	(1*5+2*4+3*3+4*2+5*1)
1	Ability to work collaboratively and effectively in diverse contexts	38	10	15	17	18	(5th) 327
2	Ability to use information and communication technology purposefully and responsibly	10	22	6	12	22	(8th) 202
3	Ability to uphold professional, moral and ethical values	22	15	21	12	20	(6th) 277
4	Ability to demonstrate responsibility and accountability towards society and environment	2	6	9	13	14	(12th) 101
5	Ability to communicate clearly and effectively	35	43	32	24	33	(1st) 524
6	Ability to think critically, reflectively and innovatively	17	34	29	27	15	(4th) 377
7	Ability to understand, value, and respect diversity and multiculturalism	1	6	16	8	5	(13th) 98
8	Ability to carry out lifelong learning and continual professional development	20	20	16	12	7	(7th) 259
9	Demonstrate problem-solving abilities	18	32	36	36	17	(3nd) 415
10	Ability to initiate, plan, organise, implement and evaluate courses of action	8	8	18	22	14	(9th) 184
11	Ability to conduct research	15	6	6	10	11	(11th) 148
12	Ability to demonstrate leadership attributes	13	7	6	16	15	(10th) 158
13	Ability to apply knowledge in practice	35	25	24	24	42	(2nd) 437

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F) Annex 6

VNU alumni rankings of the priority of general competences

Ranking the priority of general competences by the alumni (number of votes)							Standardised
N = 152		1st priority	2nd priority	3rd priority	4th priority	5th priority	
		(1)	(2)	(3)	(4)	(5)	(1*5+2*4+3*3+4*2+5*1)
1	Ability to work collaboratively and effectively in diverse contexts	14	5	8	11	15	(6th) 151
2	Ability to use information and communication technology purposefully and responsibly	4	9	10	13	12	(8th) 124
3	Ability to uphold professional, moral and ethical values	11	12	11	9	10	(4th)164
4	Ability to demonstrate responsibility and accountability towards society and environment	2	1	2	5	2	(12th) 32
5	Ability to communicate clearly and effectively	19	19	19	11	8	(1st)258
6	Ability to think critically, reflectively and innovatively	7	16	14	8	4	(5th)161
7	Ability to understand, value, and respect diversity and multiculturalism	1	1	2	4	3	(13th) 26
8	Ability to carry out lifelong learning and continual professional development	13	10	5	10	8	(7th) 148
9	Demonstrate problem-solving abilities	13	14	14	17	13	(2nd) 210
10	Ability to initiate, plan, organise, implement and evaluate courses of action	4	6	8	5	7	(10th) 85
11	Ability to conduct research	3	3	3	6	7	(11th) 55
12	Ability to demonstrate leadership attributes	6	6	7	7	14	(9th) 103
13	Ability to apply knowledge in practice	17	12	11	7	10	(3rd) 190

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Investigating the effect of clicker use on problem-solving among adult learners: A cross-sectional survey

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Abstract: Classroom response systems (clickers) have been found to engage and attract student attention and facilitate the practical application of key ideas to solve problems. This study was designed to investigate the effects of clicker use on problem-solving among adult learners. A self-administered questionnaire was distributed to 60 students after giving them actual case studies for problem-solving using PowerPoint slides. An equal number of participants were assigned to each of the control (n=30) and experimental groups (n=30). Although both groups engaged in the same problem-solving tasks, the experimental group used clickers as a learning tool in the classroom. Data were analyzed using frequency, means, exploratory factor analysis, the Friedman ranking test, and linear regression analysis. The study findings revealed overall positive responses toward using clickers in the classroom. They also suggested that clickers encouraged thinking and problem-solving. It is concluded that problem-solving learning in adult education appears to be more effective when accompanied by clicker use than through conventional teaching methods.

Keywords: Clickers; adult education; problem-solving; adult learning; instructional design.

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I. **Background**

Educators worldwide strive for effective, lifelong learning, both inside and outside the classroom. Several classroom strategies have been utilized in an attempt to achieve this goal. Inquiry-based learning (IBL) and problem-solving learning are student-centered teaching strategies that involve presenting a challenge to the student to accomplish the desired learning.[1] Classroom response systems (clickers) technology has been reported to engage and attract student attention and encourage the practical application of key ideas to problem-solving.[2] One area where the practical application of this technology is an important issue is healthcare, particularly for clinical reasoning, decision-making, and providing opportunities for comments and debates to enhance learning and future application.[3] Use of technology and practice-oriented problem-solving promotes the development of clinical skills and the ability for future adaptation.[4] It has been reported that using clickers in the classroom has a positive impact on learning, class engagement, understanding, retention, self-control, self-efficacy, and enjoyability.[5]

Further, clickers are good tools for providing personalized anonymous feedback, which is a vital part of any teaching modality. In addition, they have been shown to be an effective tool for monitoring learning.[6] All of these

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[1] Michael J. Prince and Richard M. Felder, "Inductive Teaching and Learning Methods: Definitions, Comparisons, and Research Bases," *Journal of Engineering Education* 95, no. 2 (2006): 123–138.

[2] Ashley Deal, "Classroom Response Systems," published November 30, 2007, https://www.cmu.edu/teaching/technology/whitepapers/ClassroomResponse_Nov07.pdf, accessed 8/4/ 2019.

[3] Hyunjung Ju and Ikseon Choi, "The Role of Argumentation in Hypothetico-Deductive Reasoning During Problem-Based Learning in Medical Education: A Conceptual Framework," *Interdisciplinary Journal of Problem-Based Learning* 12, no. 1 (2018): 100–116.

[4] Nadiia Demikhova et al., "Using PBL and Interactive Methods in Teaching Subjects in Medical Education," *Journal of Problem Based Learning in Higher Education* 4, no. 1 (2016): 81–90.

[5] Jae Hoon Han and Adam Finkelstein, "Understanding the Effects of Professors' Pedagogical Development with Clicker Assessment and Feedback Technologies and the Impact on Students' Engagement and Learning in Higher Education," *Computers & Education* 65 (2013): 64–76; Maite Millor et al., "Use of Remote Response Devices: An Effective Interactive Method in the Long-Term Learning," *European Radiology* 25, no. 3 (2015): 894–900; Isabel Buil, Sara Catalán, and Eva Martínez, "Do Clickers Enhance Learning? A Control-Value Theory Approach," *Computers & Education* 103 (2016): 170–182; and Niall T. Stevens, et al., "A Comparative Study: Do "Clickers" Increase Student Engagement in Multidisciplinary Clinical Microbiology Teaching?" *BMC Medical Education* 17, no. 1 (2017): 1–8.

[6] Han and Finkelstein, "Understanding the Effects."

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advantages have a positive effect by increasing pride, learning, satisfaction, and intrinsic and extrinsic motivation, decreasing boredom, and providing the desire for continuous education.[7] Problem-solving aided by well-designed multiple-choice questions has been found to enhance cognitive abilities because it requires the execution of processes to solve complex problems, thus assisting in facing real-world situations with confidence.[8] Clicker use has been shown to assist students who are not able to solve problems through discussions or anonymous trial and error.[9] Both educational policymakers and educators are constantly looking for strategies to support beneficial and enjoyable lifelong learning. This is particularly true for medical education where individuals are placed in situations that require problem-solving and decision-making throughout their careers. This study was designed to investigate problem-solving assisted by classroom response systems (clickers) among adult learners. The study attempted to answer the following research questions: Are there any differences between learning with and learning without clickers? Does using clickers encourage thinking and problem-solving? Do clickers support interactive learning and peer discussion?

II. **Methods**

Ethical approval was granted by the local institutional Research Ethics Committee. A semi-structured, self-administered questionnaire was developed on the basis of the literature,[10] which contains questions about clickers facilitating problem-solving, thinking, interactive learning, and self-assessment. The questionnaire used a 5-point Likert scale with responses

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[7] Isabel Buil, Sara Catalán, and Eva Martínez, "Do Clickers Enhance Learning?"; and Unal Cakiroglu, Fath Erdogdu, and Seyfullah Gokoglu, "Clickers in EFL Classrooms: Evidence from Two Different Uses," *Contemporary Educational Technology* 9, no. 2 (2018): 171–185.

[8] Sylvain P. Coderre et al., "The Impact of Two Multiple-Choice Question Formats on the Problem-Solving Strategies Used by Novices and Experts," *BMC Medical Education* 4, no. 1 (2004): 23.

[9] Aime A. Levesque, "Using Clickers to Facilitate Development of Problem-Solving Skills," *CBE—Life Sciences Education* 10, no. 4 (2011): 406–417.

[10] Janet S. Russell et al., "Using Clickers for Clinical Reasoning and Problem Solving," *Nurse Educator* 36, no. 1 (2011): 13–15; and Elio F. Spinello and Ronald Fischbach, "Using a Web-Based Simulation as a Problem-Based Learning Experience: Perceived and Actual Performance of Undergraduate Public Health Students," *Public Health Reports* 123, no. 2 (2008): 78–84.

ranging from strongly agree to strongly disagree. To assess reliability, the questionnaire was pretested on 30 adult students. No adjustments were necessary, and the questionnaire was distributed among the study population. Participation was voluntary. The inclusion criterion was being an adult student attending clinics and exposed to problem-solving teaching techniques without using clickers. The exclusion criteria were refusal to participate in the study and lack of problem-solving experience. The questionnaires were distributed to senior students, the purpose of the study was explained, all questions were resolved prior to participation, and informed consent was obtained.

The study sample consisted of 60 students distributed equally into two groups; one group was assigned to problem-solving with clicker use, and the second group was taught by following the traditional method (problem-solving without clickers). In both groups, students were presented with actual case studies using PowerPoint slides and were encouraged to engage in problem-solving through clinical debate. In the experimental group, students were asked to respond to multiple-choice questions using the clicker. The students' responses were then displayed in a bar graph and students were invited to provide peer opinions, discussions, and perspectives on the responses. The correct answer was then displayed. For the control group, the same PowerPoint slides were used to encourage problem-solving through clinical debate. They were then asked to respond to the same multiple-choice questions without clicker use and invited to provide opinions and engage in a discussion.

II.1. *Statistical analysis*

The collected data were analyzed using SPSS Version 22 (IBM Corp. Released 2013. IBM SPSS Statistics for Windows, Version 22.0. Armonk, NY: IBM Corp). Frequency, means, factor analysis, the Friedman ranking test, and simple linear regression were used to analyze the data.

III. **Results**

III.1. *The psychometric characteristics of the questionnaire*

Psychometric characteristics were assessed using validity and reliability of the questionnaire.

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III.1.1. Questionnaire validity

III.1.1.1. Factor analysis

Factor analysis was performed (Table 1). The correlation matrix showed the appropriateness of the data for factor analysis. The Kaiser-Meyer-Olkin measure of sampling adequacy was 0.834 (more than 0.6). Bartlett's test of sphericity was significant (0.0001); thus, a factor analysis with principal component analysis was performed. Using the rotated component matrix and the extraction method with Varimax rotation and Kaiser normalization, three factors were extracted. The names of the factors were created on the basis of the meaning of the variables included in each factor. These three factors were 1) support interactive learning, 2) encourage thinking and problem-solving, and 3) self-assessment.

Table 1

Factor Loadings of Questionnaire Items Regarding Clicker Use

No.	Statement	Component		
		1	2	3
Q8	I felt that my opinions have been taken into account	.915		
Q7	Using the clickers helped me to participate in problem-solving more openly	.868		
Q9	Helped in evaluating student understanding	.862		
Q3	Clickers helped me understand and comprehend the clinical problems	.859		
Q14	Helps prepare me for a future career	.840		
Q2	Clickers made the problem-solving more interesting	.836		
Q12	Improved critical thinking and helped build knowledge	.831		
Q10	It helped me in making clinical decisions	.802		
Q5	Immediate feedback from instructor helped my understanding	.794		
Q11	Has led to a better learning experience in this field	.790		

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No.	Statement	Component		
		1	2	3
Q4	Clickers encourage students to answer and solve problems	.644		
Q1	The use of clickers encourages thinking skills		.636	
Q13	Helped interaction and solving issues of scientific debate and confusion		.786	
Q15	Enhanced my ability to actively solve real-life problems		.476	
Q16	Distribution of class responses helped me be aware of my strengths and weaknesses			.924

III.1.2. Reliability

Cronbach's Alpha was 0.917. Table 2 shows Cronbach's α values, which were above 0.70 for the questionnaire items, indicating a good internal consistency. It ranged from 0.905 for "clickers made the problem-solving more interesting" to 0.932 for "distribution of class responses helps to know my strength and weakness." Item-total correlation coefficients were positive and above 0.20 (Pearson's $r > 0.2$) for including the item.

Table 2

Reliability Analysis Based on the Corrected Item-total Correlation and Cronbach's Alpha Coefficient if Item Deleted

No.	Impact Item	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
1.	The use of clickers encouraged thinking skills	.533	.915
2.	Clickers made the problem-solving more interesting	.854	.905
3.	Clickers helped me understand and comprehend the clinical problems	.797	.906

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No.	Impact Item	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
4.	Clickers encourage students to answer and solve problems	.794	.909
5.	Immediate feedback from instructor helped me to understand	.816	.907
6.	Discussions with peers help me to better understand the course material	.803	.909
7.	Using the clickers helped me participate in problem-solving more openly	.811	.906
8.	I felt that my opinions have been taken into account	.859	.905
9.	Helped in evaluating student understanding	.745	.908
10.	It helped me in making clinical decisions	.732	.909
11.	Has led to a better learning experience in this field	.782	.908
12.	Improved critical thinking and helped build knowledge	.860	.906
13.	Helped interaction and solving issues of scientific debate and confusion	.749	.910
14.	Helps prepare me for a future career	.721	.909
15.	Enhanced my ability to actively solve problems in the real life	.030	.929
16.	Distribution of class responses helps me learn about my strengths and weaknesses	-.016	.932

III.2. *Results of the pretest*

A pretest (problem-solving without clickers) was conducted to assess whether there were statistically significant differences between experimental and control groups before clicker use. The researcher used the t-test to detect the significance of the differences between the average scores of the

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experimental and control groups at the level p≤0.05 in the pretest before clicker use was introduced (Table 3). Table 3 shows that there was no statistically significant difference between the mean scores of the experimental and control groups before clicker use. The mean scores of the experimental and control groups in the pretest are represented graphically in Figure 1.

Table 3

Means, Standard Deviations, Value of T, Level of Significance, and Value of Impact Between the Means of the Experimental and Control Groups in the Pretest

Variable	Group	N	Mean	Std. Deviation	df	T	Sig. (2-tailed)	effect size
Questionnaires	Control	30	24.4511	2.3669	58	1.458	Not Significant	0.03
	Experimental	30	23.4364	2.9856				small

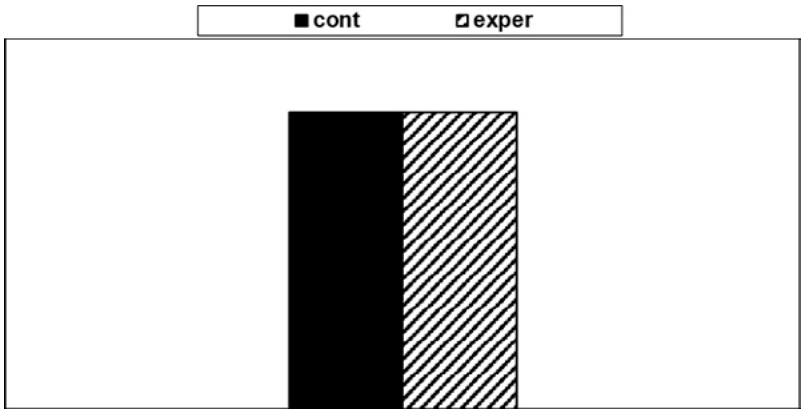

Figure 1

Graphical Representation of the Pretest Mean Score of the Questionnaire before Clicker Use

III.3. *Results of the post-test*

A t-test was conducted to test the validity of the following hypothesis: *There will be a statistically significant difference at the level of p ≤0.05*

between the means of the control and experimental group in the post-test. The researcher used a t-test to detect differences between the mean scores of the experimental and control groups following the introduction of clicker use for the experimental group (Table 4). Table 4 shows that there was a statistically significant difference between the mean scores of the control and experimental groups following the introduction of clicker use in the experimental group. So, the size of the effect of the independent variable on the dependent variable was found to be strong. The mean scores for the experimental and control groups are represented graphically in Figure 2.

Table 4

Means, Standard Deviations, Value of T, Level of Significance, and Value of Impact Between the Means of the Experimental and Control Groups in the Post-test

Variable	Group	N	Mean	Std. Deviation	df	T	Sig. (2-tailed)	effect size
Questionnaires	Control	30	32.3871	1.0962	58	24.055	0.01	0.89
	Experimental	30	52.523	4.4521				large

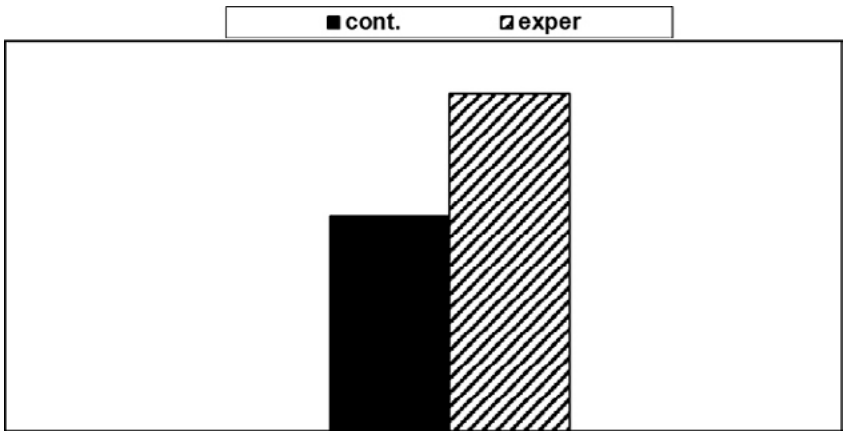

Figure 2

Graphical Representation of the Post-test Mean Score for the Experimental and Control Groups Following Introduction of Clicker Use in the Experimental Group

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III.4. *Friedman ranking test*

Using the Friedman ranking test, self-assessment was ranked by the experimental group as the most significant benefit, followed by encouraging thinking and problem-solving, and supporting interactive learning ($p = 0.0001$) (Table 5).

When comparing different items among the experimental group; factor #1 (use of clickers encouraged thinking skills) was ranked first (10.46), whereas item #14 (helps prepare me for a future career) was ranked as the least significant advantage (Table 6).

Table 5

Factors Ranked by Students' Responses

Variable	Mean Rank
Self-assessment	2.20
Encouraging thinking and problem-solving	2.12
Support interactive learning	1.68
N	117
Chi-Square	22.407
Df	2
Asymp. Sig.	.000

Table 6

Different Factors as Ranked by the Respondents

No	Factor	Mean Rank
Q1	The use of clickers encouraged thinking skills	10.46
Q4	Clickers encouraged students to answer and solve problems	10.32
Q13	Helped interaction and solving issues of scientific debate and confusion	9.59
Q6	Discussions with peers help me to better understand the course material	9.52
Q15	Enhanced my ability to actively solve problems in the real life	9.14
Q11	Has led to a better learning experience in this field	8.54

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No	Factor	Mean Rank
Q12	Improved critical thinking and helped build knowledge	8.37
Q7	Using the clickers helped me participate in problem-solving more openly	8.36
Q8	I felt that my opinions have been taken into account	8.27
Q2	Clickers made the problem-solving more interesting	8.20
Q5	Immediate feedback from instructor helped me to understand	7.96
Q16	Distribution of class responses helps me learn about my strengths and weaknesses	8.77
Q9	Helped in evaluating student understanding	7.74
Q3	Clickers helped me understand and comprehend the clinical problems	7.07
Q10	It helped me in making clinical decisions	7.20
Q14	Helps prepare me for a future career	6.49

III.5. *Regression*

A linear regression analysis was performed to test whether the support for interactive learning and self-assessment enhances thinking abilities and problem-solving significantly. The Pearson correlation indicated a direct positive relation and that any increase in teaching support would result in a 42.2% increase in thinking. The ANOVA was significant at p =.020. The regression equation was: encouraging, thinking, and problem-solving = 2.643 + 0.33*support education (Y=3.06+0.34X) with a significance level p =.000, R2 =.178, F (1,29) = 6.080, p <.000. It was found that supporting education can significantly predict thinking abilities and problem-solving.

IV. **Discussion**

Among educators and education policymakers there are two essential matters: teaching strategies and learning. An influential educational tool for the young generation is technology-aided teaching. Both clickers and problem-solving strategies are beneficial to the process of recalling and

remembering, and thus information retention, real-world problem-solving, and decision-making. Using actual or practice-based cases allows the application of knowledge and skills development. It has been reported that real-world simulation is an effective method in the healthcare field.[11]

This investigation revealed that using clickers strongly assisted in thinking skills and problem-solving and was ranked first with the highest mean. Cook and Calkins[11] found that the use of clickers promotes high-order questioning on Bloom's taxonomy, depending on whether the question is designed around analyzing, evaluating, creating, or just recall and remembering.

High order skills and metacognition are reported when clickers are combined with other teaching strategies.[12],[13] Morales attributed this to problem-solving learning with the help of a dynamic, relaxing, and engaging atmosphere created by the use of clickers. Moreover, it has been shown that incorporating clickers in any teaching strategy appears to have a positive effect.[14]

In agreement with others,[15],[16] this study found that learning was more interesting and thus engaging. Clickers also helped in problem-solving, possibly through stimulation of the students, interaction, and discussion. Furthermore, anonymity allows learning and comprehension of the problem through trial and error. It has been shown that anonymity affects group interaction and learners' participation. When anonymous, learners feel safe to inquire and respond; thus Clickers de-individualizes and reduces social barriers and behavioral restrictions. Students made more comments and

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[11] Rifka Cook and Susanna Calkins, "More Than Recall and Opinion: Using "Clickers" to Promote Complex Thinking," *Journal on Excellence in College Teaching* 24, no. 2 (2019): 51–76.

[12] Melanie Brady, Helena Seli, and Jane Rosenthal, "'Clickers' and Metacognition: A Quasi-Experimental Comparative Study about Metacognitive Self-Regulation and Use of Electronic Feedback Devices," *Computers & Education* 65 (2013): 56–63.

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[16] Han and Finkelstein, "Understanding the Effects"; Millor et al., "Use of Remote Response Devices"; Buil, Catalán, and Martínez, "Do Clickers Enhance Learning?"; Stevens et al., "A Comparative Study"; and Liu et al., "The Effects of Clickers."

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practiced critical thinking more than when they are identifiable.[17],[18] Encouraging students to participate within the context of the clicker-created atmosphere facilitated problem-solving, most likely due to the immediate feedback and self-reflection among students, thus assisting in preparing them for future clinical situations.[19] In addition, this could assist them in how to find solutions, organize information, and build knowledge.

The results of this investigation showed that, as an instructional method, clickers rely on questioning and peer discussion, thus stimulating the latter and resulting in scientific debates that help build communication skills with teachers and colleagues.[20] However, questions should be designed to encourage peer discussion that will help them arrive at the correct answers and improve understanding.[21],[22],[23] Communication is an essential part of the healthcare profession when dealing with patients, particularly those with serious diseases, as well as in interprofessional collaboration. Communication in healthcare is a vital issue in patient safety and outcomes.[24]

As reported in the literature, the results of this study indicate that immediate feedback was a significant part of using clickers.[25] It has been

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[17] Rifka Cook and Susanna Calkins, "More Than Recall and Opinion: Using "Clickers" to Promote Complex Thinking," *Journal on Excellence in College Teaching* 24, no. 2 (2019): 51–76.

[18] Leonard M. Jessup, Terry Connolly, and Jolene Galegher, "The Effects of Anonymity on GDSS Group Process with an Idea-Generating Task," *MIS Quarterly* 14, no. 3 (1990): 313–21. doi:10.2307/248893.

[19] Levesque, "Using Clickers to Facilitate Development."

[20] Morales, "Can the Use of Clickers"; Nancy Meedzan and Kelly L. Fisher, "Clickers in Nursing Education: An Active Learning Tool in the Classroom," *Online Journal of Nursing Informatics (OJNI)* 13, no. 2 (2019): 1–19; and Wentao Chen, Jinyu Zhang, and Zhonggen Yu, "Advantages and Disadvantages of Clicker Use in Education," *International Journal of Information and Communication Technology Education* 13, no. 1 (2017): 61–71.

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[24] Janet Wagner, Beth Liston, and Jackie Miller, "Developing Interprofessional Communication Skills," *Teaching and Learning in Nursing* 6, no. 3 (2011): 97–101; and Cynthia Foronda, Brent MacWilliams, and Erin McArthur, "Interprofessional Communication in Healthcare: An Integrative Review," *Nurse Education in Practice* 19 (2016): 36–40.

[25] Melanie Brady, Helena Seli, and Jane Rosenthal, "'Clickers' and Metacognition"; Meedzan and Fisher, "Clickers in Nursing Education"; and Michael E. Lantz and Angela Stawiski, "Effectiveness of Clickers: Effect of Feedback and the Timing of Questions on Learning," *Computers in Human Behavior* 31 (2014): 280–286.

reported that feedback is essential for continuous learning and improvement;[26] it requires skills to deliver and is essential to the quality of learning.[27] Using clickers can overcome students' fears of being evaluated or judged by teachers or peers. Their use assists in delivering effective and immediate feedback along with a positive learning experience. Clickers can serve as a formative type of assessment to show areas of strength and weakness among students. Regarding lectures, learning may serve as formative feedback to change the course or teaching/evaluation strategy.

The results of this investigation demonstrate that classroom response systems had a positive impact on self-assessment through continuous appraisal of areas of strength and weakness, since students ranked it as the most significant advantage. Self-assessment is defined as a formative assessment in which the learner can assist their learning and the nature of work, and recognize and appraise the quality and shortcomings of their own learning.[28,29]In enabling the learners to evaluate their own degree and quality of learning, confidence, self-regulation, motivation, and independence are reinforced.[26-30] This student-centered strategy may improve in-depth learning through inductive teaching and inspire students to build their own knowledge base. If students are trained to use it as a self-assessment rather than self-grading, it will be a valuable tool.[31,32]

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[26] Rachel Jug, Xiaoyin "Sara" Jiang, and Sarah M. Bean, "Giving and Receiving Effective Feedback: A Review Article and How-to Guide," *Archives of Pathology & Laboratory Medicine* 143, no. 2 (2019): 244–250.

[27] Md. Mamoon Al-Bashir, Md. Rezaul Kabir, and Ismat Rahman, "The Value and Effectiveness of Feedback in Improving Students' Learning and Professionalizing Teaching in Higher Education," *Journal of Education and Practice* 7, no. 16 (2016): 38–41.

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[31] Rachel Jug, Xiaoyin "Sara" Jiang, and Sarah M. Bean, "Giving and Receiving Effective Feedback: A Review Article and How-to Guide," *Archives of Pathology & Laboratory Medicine* 143, no. 2 (2019): 244–250.

[32] Md. Mamoon Al-Bashir, Md. Rezaul Kabir, and Ismat Rahman, "The Value and Effectiveness of Feedback in Improving Students' Learning and Professionalizing Teaching in Higher Education," *Journal of Education and Practice* 7, no. 16 (2016): 38–41.

As reported in the literature, our results indicated that classroom response systems (clickers), may increase students' abilities to solve problems and think, thus better preparing them for their future careers. This method of learning sharpens students' skills and increases their confidence to professionally argue and debate within a scientific context, helps students and educators assess points of strength and weakness both among students and in the course, and deepens the understanding and application of knowledge rather than operating at the lower levels of Bloom's taxonomy.

Although this study provided evidence about the role of classroom response systems in learning, the small sample of students may limit a concrete recommendation. On the other hand, this study outlined several effects of clickers: essentially the positive effect on self-assessment and the boosting of learners' thinking and analysis. In addition, this study provides a direction for future research. Further analysis to investigate and relate this strategy to, for example, other teaching strategies, would contribute to cognitive learning styles and self-efficacy, and should prove to be worthwhile.

V. **Conclusion**

The result of this investigation on using clickers with problem-solving strategies was a positive learning experience, particularly in terms of developing critical thinking, peer discussion, and self-assessment. It can be concluded that aiding problem-solving with the use of clickers can improve students' learning and skills. Certain limitations of the findings within this study need to be acknowledged. First, it was carried out on a small sample. Second, because of a lack of accessibility and student time convenience, a qualitative study was not undertaken. A potential future research direction could also consider using different strategies and different clinical situations and questioning or comparing these. Qualitative studies may further the understanding of student perspectives and the influences of clickers on learners. Limitations aside, the findings may be of value to educators and researchers.

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Editor's Acknowledgements

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Guidelines for Authors

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TJHE
Ethical Guidelines for Publication

TJHE Ethical Guidelines for Publication

FINAL VERSION (MARCH 2015)

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Date: 16 March 2015

Approved by the TJHE Editorial Board and signed on behalf of the Tuning Academy by:

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Preparation for the labour market: Strategies to enhance graduate experience and workplace effectiveness

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