



Teaching and Third Mission in Synergy: An Empirical Research on Italian and International Contexts

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Abstract

This paper refers to an empirical research promoted by the University of Turin, addressing the following research question: what synergies exist between the academic missions of teaching, research and third mission. The exploratory sequential mixed design of research envisages firstly a qualitative study, involving interviews with faculty members from each Department of the University of Turin, and secondly a quantitative study, through a semi-structured questionnaire, administered to faculty members of various Italian and international universities. A content analysis of the interviews identified specific synergies between the mission of teaching and third mission, divided into three semantic categories: as an effect of third mission activities, respondents attested 1) updates of teaching contents, through interaction with external stakeholders and transfer of tacit knowledge from working and policy contexts, 2) developments in teaching delivery modalities, like changes in forms of presentation, speech formulation and discourse devices, introduction of new teaching tools and settings, and 3) active learning demonstrated by participating students, who also shared with faculty members extra-academic know-how in the field of communication and use of digital tools. The completed questionnaires were then subjected to a frequency distribution analysis. First results show that, from faculty members' perspectives, the concept of institutional missions as three pillars is partially being overcome, in favor of that of a virtuous circle.

Keywords: active learning, engagement, higher education, knowledge exchange, mixed methods

1. Introduction

Since the beginning of the twenty-first century, higher education started to evolve from the traditional model of the Humboldtian university (Fronzizi et al., 2019) and to gradually and globally recognize a third vocation of academia: not only to generate value for the external

world through the education of students, as the first mission of teaching accomplishes, and through new contributions to universal knowledge, as the second mission of research does, but through direct contact between faculty members and external stakeholders, belonging to the public, private or third sector. Contacts between university and the private sector were the first to obtain formal mention in institutional strategies and quality assurance processes, as in Italy, described as “knowledge transfer” (D.P.R. 76/2010), with a scope limited to the transmission of knowledge related to STEM disciplines. As the informal experiences carried out by single institutions were collated, the term was substituted with “third mission” (D.M. 47/2013), aligning with an internationally shared terminology used to refer to the general range of possible activities through which university can open up to collectivity (Compagnucci & Spigarelli, 2020); “third mission” removes the connotation from a single branch of knowledge, suggesting that all disciplines could contribute to societal improvement. As real-world problems are complex and multi-layered, real-world interventions often require interdisciplinary approaches: various academic compartments that are usually not in communication have the chance to interact during third mission activities. Generated value for society can be economic, social, cultural, environmental and others (Blasi, 2023), as many classification systems have been devised to identify the various forms third mission can assume (Boffo & Moscati, 2015): despite the discrepancies between national contexts, technology transfer (interaction between universities and bodies fostering innovation), public engagement (promotion of the well-being of citizens and citizen involvement, including schools and municipalities) and lifelong learning (non-formal education offered by university) are generally acknowledged.

“Third mission” mostly denotes a university-society relationship which is one-way and adopts a transmissive approach: society can be *informed* and *assisted* by university, as the external parts are only beneficiaries of third mission, like companies that benefit from an academically conceived patent or citizens who benefit from new public health campaigns. Supra-national bodies have increasingly highlighted moving beyond this model as a best practice (Council of the European Union, 2022; OECD, 2024), which led in Italy to the adoption of the term “knowledge enhancement” instead of “third mission” (ANVUR, 2023), described as a set of collaborative processes in which knowledge is not merely transferred, but expanded. This paves the way to the paradigm that society can be *worked with* and *listened to*, valuing tacit knowledge, experience of communities of practice, access to information and perspectives precluded to academia (Goddard et al., 2016). Society can help shape the research agenda in terms of key objectives, thanks to the knowledge about contexts of application and related priorities, and can contribute to the development of potential solutions to global challenges, thanks to specialized professional expertise. Third mission no longer occupies a tertiary position, as its original designation suggested (OECD, 2019): it now not only generates impact for external parties, but also has the potential to initiate continuous improvement processes inside academia. Third mission can in fact intercept teaching experiences, offering university students unique perspectives on the university world, with an actual benefit also detected for the quality of third mission activities themselves (Jensen & Buckley, 2011). In literature, some evidence can be found on the relationship between involvement in third mission and curricular learning (Shah & Martinez, 2016; Mitchell et al., 2017; Berndt & Nitz, 2023), in particular on implementing active learning, as produced by the subject through practicality and intersubjective interaction, which enables metacognition; the learner is involved at the interpersonal level too, by the use of reflective and self-regulating strategies, and develops transversal skills, employable to plan and intervene consciously within many heterogeneous contexts. The paper presents research results which show evidence pointing toward a productive exchange between teaching and third mission, empowering students as well as teaching professionalism.

2. Methods

Third mission is still in the process of being recognized and integrated by universities in their strategic and operational plans, as well as within their own organizational structure (Compagnucci & Spigarelli, 2020; Reed et al., 2023). Thus, the research question wonders which synergies exist between third mission, teaching and research, and if there are missions that prevail over others. It is hypothesized that third mission is carried out in a way that is negatively disproportionate to the other missions and has little synergy with them. Objective of the research is to understand the experiences lived by faculty members and is achieved through an exploratory sequential mixed design (Trinchero & Robasto, 2019). The explorative part is a qualitative study that investigates the sound reasons behind the faculty members' views on the coexistence and integration of missions, through semi-structured interviews as technique of data collection. The population consists in faculty members of the University of Turin and the sampling technique is non-probabilistic for representative elements toward the number of Departments. The sample size corresponds to 27 respondents, including 14 associate professors, 5 full professors, 3 tenured researchers, 2 non-tenured researchers, 2 research technicians and one research fellow.

The data analysis technique consists in software-assisted content analysis (Mayring, 2000), with the support of the NVivo 15 software. The choice of applying content analysis, over all the others techniques of analysis, was guided by the need to process qualitative data – interviews' transcripts – without creating hierarchies between units of meaning, as expected for example from thematic analysis and template analysis, but rather by giving priority to same-level semantic relationships and identifying shared attributes between units of meaning (such as synergies, imbalances and related motivations), to reflect a multitude of potential causes-and-effects as well as mutual influence (Gläser-Zikuda et al., 2020). For reliability purposes, content analysis followed the steps mentioned by Mayring for the inductive development of semantic categories (2000): 1. selection and definition of aspects of interest, derived from literature review, to determine which elements of the textual material should be considered during the analysis; 2. inductive formulation of categories from the textual material; 3. category review: selection, reduction, generalization, combination and integration of categories, to ensure that each category is informative, equally comprehensive of each text from which it is extrapolated and not redundant; 4. interpretation of results, based on lexical frequencies or other elements deemed relevant. Content analysis generated a total of 23 semantic categories. Titles of categories followed the scheme “[detected synergy/imbalance], attributed to [the origin of the synergy/imbalance based on the respondent's perception]”, for a total of 10 synergies and 13 imbalances.

The confirmative part of the mixed methods approach controlled the frequency distribution of categories¹, with a semi-structured questionnaire as tool of data collection. The population consists in faculty members from the University of Turin, La Sapienza of Rome, University of Padua, Alma Mater Studiorum of Bologna, Milano Statale University in Milan, University of Udine, University of Salerno, IULM University of Rome, Université Savoie Mont Blanc in France, University of Glasgow in Scotland, King's College of London in England and University of Applied Sciences and Arts of Southern Switzerland (SUPSI). The sample technique has a non-probabilistic convenience and snowball approach: some faculty

¹ The quantitative study did not use inferential statistic techniques, such as bivariate analyses. This choice is motivated by the need to verify the frequency of each distinct category that emerged from the qualitative study, rather than identifying relationships between background variables and categories, or between different categories.

members with institutional roles toward third mission received the questionnaire and spread it into the different institutions. The sample size corresponds to 304 respondents, mostly belonging to Italian universities (71%), French universities (27%), just a few from UK and Switzerland (1.3% and 0.7%). As for the gender identity, 49.7% of respondents identify themselves as female and 49.4% as male, with 0.9% preferring not to answer. About the age group of belonging, 38% are from 41 to 50 years old, 29% from 51 to 60 years old, 21% from 31 to 40 years old, 11% from 61 to 70 years old and 1% until 30 years old. Based on the ERC classification, the disciplinary field of belonging is for the 31% of respondents Life Sciences, for the 29% Physical sciences and engineering, for the 24% Social sciences, for the 12% Humanities, for the 4% an interdisciplinary field. The teaching experience of respondents is equal or longer than 10 years for the 69% of respondents and equal or longer than 15 years for the 57%.

3. Results

Three categories emerged from content analysis describe synergies arising specifically from the relationship between teaching and third mission: teaching content update, developments in teaching delivery modalities, active learning demonstrated by participating students.

3.1 Teaching content update

A synergy between teaching and third mission is seen in the chance to bring development into teaching content: as a consequence of third mission activities, faculty members modify or supplement the content of their course. This may happen thanks to insights or findings resulting from interaction with beneficiaries or with partners, who may possess new knowledge or have access to privileged channels, such as contact with specific audiences. Someone recognizes that such interaction provided an opportunity for the curriculum to be partially updated, either by interventions during the course made by stakeholders or by faculty members themselves. Some respondents also focused their lessons on the third mission activities they carried out and presented their experiences as case studies of interest for students.

“At least, my preference is to start with real-life problems. So, when I’m teaching, I always find myself saying, ‘Ah, look, this happened to me – this and that – whilst I was doing consultancy; I didn’t know how to solve it, and as it turned out, there was an underlying problem, for example, with data collection.’ So, perhaps partly because of the subject I teach, I’m really inclined to talk about what happened to me, also during third mission” (Interview 13-PA)

“So now I’ve planned to invite a few people to next year’s courses to give some talks and so on. This is to create a more direct link between the material to be studied and what the student really needs to retain after studying for the exam.” (Interview 16-RT)

3.2 Developments in teaching delivery modalities

Respondents identify a synergy between teaching and third mission in their experience of bringing changes in their teaching strategies, or other teaching delivery modalities, after conducting third mission activities. These modifications consist of:

- changes in language, vocabulary and discourse devices, mostly associated with public engagement experiences and the related tendency of addressing a general audience, which

requires the effort to convey complex research concepts without compromising their core features, employing aids such as metaphors and examples, suitable for first-year students;

- changes in strategies (exercises, outdoor experiences), involving new settings or new tools as hands-on materials and models, aimed at overcoming some of the limitations of the traditional lecture-based approach and improving student involvement and understanding.

“... So, in that instance [during a lesson], I realized that I’d managed to get out of a rather overly complex technical question by using an explanation based on concepts from the third mission – let’s put it that way.” (Interview 11-PA)

“... [during third mission] we use a virtual table – a computer reproducing the size of a human body – to explain anatomy in three dimensions. We started using it a lot with the public and realized there was a great deal of interest in experiencing the three-dimensional aspect. So, from there, I decided to include a practical session with this virtual dissection table in the various teaching courses I conduct... seeing this kind of enthusiasm actually made me think that perhaps it could work for our students too.” (Interview 07-PA)

3.3 Active learning demonstrated by participating students

Respondents recognized a synergy in the active learning role that students participating in third mission activities have taken on. In relation to specific courses, student participation contributes to the achievement of predefined learning objectives. Other than through courses, participation can also take place on a more regular basis within the institutional framework of a research internship, a bachelor’s or master’s degree dissertation project or a scholarship dedicated to third mission activities. In each of these scenarios, according to respondents’ accounts, third mission activities qualify as a learning opportunity that enables the application of theoretical knowledge acquired in lectures, by tackling authentic tasks. The active role is sometimes defined not only through involvement for students in the implementation of the activities, but also during the design phase.

Participation in third mission activities reveals to be an interesting educational experience also for giving students the possibility to interact with various academic figures and share their informally acquired know-hows (mostly in the field of communication and use of digital tools and media) with them, who can employ this knowledge to develop new teaching modalities. In this sense, students can have an added value *from* third mission activities and can also represent an added value *for* third mission activities.

“This is certainly a side effect of the third mission: the public engagement we designed for primary schools has also, in some way, benefited the university students enrolled in courses of Modern Language Teaching and Pedagogy. They put their knowledge and skills into practice and learned a little more about public engagement, but also about classroom management: in short, the very themes of the project itself.” (Interview 24-PO)

“In my view, as they’re young, they’re even more... inclined... perhaps even to come up with innovative ideas, thoughts, suggestions... It helps them to understand the importance... We’re in a laboratory that carries out basic research, so ours is a type of science – I wouldn’t call it abstract, but rather, ‘what does the protein do in the cell?’, that is... it’s not applied science aimed at solving practical problems. So, even showing them the same... science, because the topics are obviously the same ones we teach about and we research on, but presented in a different way, to children, in my opinion, is, in any case, an enriching experience.” (Interview 17-TR).

Frequency distributions of these three categories were controlled through dedicated items in the questionnaire, formulated as follows: “After third mission activities, did you notice if they had any effect on your teaching (on same topics or different topics)?” for teaching content update and developments in teaching delivery modalities, “Have you ever involved your students in third mission activities, and if you did, did this have any effect on the achievement of your course’s learning objectives?” for active learning demonstrated by participating students, and in particular the distribution of added value *for students*, and “Did the contact – thanks to third mission – with people in different academic positions from yours (eventually including students) give you tools that were useful for teaching and research?”, for the distribution of added value *represented by students* for third mission activities. Frequency distributions are reported in Tab. 1.

Table 1: Frequency distributions collected by items of the questionnaire specifically devoted to synergies between teaching and third mission

Effect of third mission on teaching (271 respondents)	Participation of students in third mission and effects on learning objectives achievement (272 respondents)	Useful tools for teaching and research obtained from contact with people in different academic roles, including students (254 respondents)
Yes, in teaching delivery modalities: 21% (56 respondents)	Yes, and it was complementary for learning objectives achievement: 40% (108 respondents)	Yes: 69% (176 respondents)
Yes, in teaching content update: 15% (42 respondents)	Yes, but without effects on learning objectives achievement: 9% (25 respondents)	No: 31% (78 respondents)
Yes, in both teaching delivery modalities and teaching content update: 29% (79 respondents)	Students refused to participate in third mission activities: 4% (10 respondents)	
No: 35% (94 respondents)	No involvement of students: 47% (129 respondents)	

Source: made by the author

4. Discussion

Even though the framework provided by literature suggested a major interest for the relationship between research and third mission, the explorative qualitative study of the mixed methods design identified productive synergies between teaching and third mission; synergies between research and third mission are present, but along with some imbalances. In particular, third mission – and experiences derived from it – contributes in grounding disciplinary contents with high degree of abstraction, through immersive and sensorially stimulating experiences, and in establishing a constructive dialogue between teaching and the current state of “real world”, intended as external contexts (from the commercial, professional, social point of view) relevant to the disciplines involved.

The confirmative quantitative study attested frequency distributions which demonstrate a significative diffusion of the synergies. 65% (177 respondents out of 271 responding to the specific item) reported one or more effects on their teaching after third mission. Effects on teaching delivery modalities are slightly more frequent (50%) than on teaching content update (44%). Involvement of students in third mission activities by faculty members is not

prevalent, but still is carried out by almost half of the respondents to the item (49% versus 51%). In cases where students were involved (133 respondents out of 272), the 81% (108 respondents) stated that it was complementary for learning objectives achievement. Also the knowledge exchange between faculty members in different roles and students is proved to be frequent (69% out of 254 respondents).

For both interviews and the survey, limits of validity consist of some bias underlying the composition of the sample, as the participation in interviews and compilation of questionnaires seem to relate to some prior interest in third mission. Most of respondents reported an intense third mission agenda and 16 respondents out of 27 detain institutional commitments concerning departmental oversight of third mission, which could partially define their stance on the research object. As regards the survey, 88.8% out of 304 declared to have conducted at least once third mission activities, which reconstructs the perspective of a sample that is not entirely representative of the diffusion of third mission in higher education institutions.

5. Conclusion

Research results concerning the relationship between teaching and third mission outline how third mission can serve as the starting point for teaching improvement processes and how extra-academic knowledge can support academic knowledge, enabling processes of faculty development and student voice and following the paradigm of civic university (Goddard et al., 2016). In the civic university, third mission is not a “third pillar”, but instead an horizontal linking between teaching and research, and every mission is embedded to the others, so that they can mutually and circularly nourish and develop from one another. This is reflected in research results. Third mission can bring faculty members’ awareness – and so, teaching activities they conduct – more proximate to societal contexts, constantly evolving, which represent communities of practice for the relevant disciplines, as the professional world, associationism or municipalities. In this regard, third mission experience can help to reduce the distance between academic knowledge and demands or transformations occurring *extra moenia*. This also leads teaching faculty members potentially closer with latent learning needs of students, deeply connected to the job market, and may cause a subsequent update of the course curriculum, to prevent skill mismatch between competences owned by university students after the achievement of a degree and required competences in the workplace and, doing so, to promote employability.

In addition, the possibility of cross-fertilization between faculty members and informally acquired resources of students can increase faculty members’ wealth of experience, add tools to their educational equipment and bring innovation for future teaching, and more generally encourage intergenerational dialogue, which can leave room for feedback and suggestions for faculty members about teaching prospects of improvement.

However, another branch of research findings identifies issues related to the presence of third mission in faculty members’ working life, such as struggles with time management, institutional acknowledgment and weaknesses in the evaluation frame. Some recommendations at the institutional level, aimed at supporting and promoting third mission, can be:

- to listen to micro-level problems, in order to better define bottom-up third mission schedules and assign responsibilities: which essential equipment and infrastructure should be guaranteed, how teaching duties could be aligned or redistributed according to the planning of all three missions throughout the year, which

bureaucratical paperwork and academic managerial roles appear to be incompatible with undertaking third mission activities;

- since not all Departments can equally respond to third mission obligations with the same amount and typology of third mission activities, to collect diverse needs of Departments related to third mission, before allocating generalized fundings or providing training proposals, in order to optimize resources according to the profiles and strategic objectives of single Departments;
- As the teaching-third mission synergy shows, to remember about all human resources who are present in university, who often contribute to third mission activities without this being acknowledged, as research technicians, PhD students and Bachelor's and Master's degree students. The institution could reflect on how to formalize their roles inside activities and how to attest any competences acquired, as through microcredentials.

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References

- Berndt, J., & Nitz, S. (2023). Learning in citizen science: The effects of different participation opportunities on students' knowledge and attitudes, *Sustainability*, 15(16).
- Blasi, B. (2023). *Società e università: valutazione e impatto sociale*, Milano: FrancoAngeli.
- Boffo, S. & Moscati, R. (2015). La Terza Missione dell'università. Origini, problemi e indicatori, *Scuola democratica*, 6(2), 251-272.
- Compagnucci, L., and Spigarelli, F. (2020). The Third Mission of the university: a systematic literature review on potentials and constraints, *Technological Forecasting and Social Change*, vol. 161.
- Council Recommendation (EU) 2022/2415 of 2 December 2022 on the guiding principles for knowledge valorisation. <https://eur-lex.europa.eu/legal-content/IT/TXT/?uri=CELEX%3A32022H2415>
- Decreto del Presidente della Repubblica 76/2010. Regolamento concernente la struttura ed il funzionamento dell'Agenzia nazionale di valutazione del sistema universitario e della ricerca (ANVUR). <https://www.anvur.it/wp-content/uploads/2017/04/gazzetta-anvur.pdf>
- Decreto Ministeriale 47/2013. Decreto autovalutazione, accreditamento iniziale e periodico delle sedi e dei corsi di studio e valutazione periodica. https://www.anvur.it/wp-content/uploads/2013/01/3.%20DM%2047_2013.pdf
- Frondizi, R., Fantauzzi, C., Colasanti, N., and Fiorani, G. (2019). The evaluation of universities' third mission and intellectual capital: theoretical analysis and application to Italy, *Sustainability*, 11(12).
- Gläser-Zikuda, M., Hagenauer, G., & Stephan, M. (2020). The potential of qualitative content analysis for empirical educational research, *Forum of Qualitative Social Research*, 21(1).

- Goddard, J., Hazelkorn, E., Kempton, L., and Vallance, P. (2016). *The civic university: The policy and leadership challenges*, Cheltenham: Edward Elgar Publishing.
- Jensen, E., & Buckley, N. (2011). *The role of university student volunteers in festival-based public engagement*, Bristol: National Co-ordinating Centre for Public Engagement.
- Mayring, P. (2000). Qualitative content analysis, *Forum of Qualitative Social Research*, 1(2).
- Mitchell, N., Triska, M., Liberatore, A., Ashcroft, L., Weatherill, R., & Longnecker, N. (2017). Benefits and challenges of incorporating citizen science into university education, *PLoS One*, 12(11).
- OECD (2019). Engagement with the wider world. *Benchmarking Higher Education System Performance*. Paris, France, pp. 381-431.
- OECD (2024). ITA.CON Project: Knowledge exchange and collaboration between university and society, *OECD SME and Entrepreneurship Papers*, vol. 47.
- Reed, A., Loveys, M., Hatzipanag, S., Hackett, P., Koudri, S., and Collie, J. (2023). Exploring Knowledge Exchange: barriers and perceptions, *EdMedia + Innovate Learning 2023*. Vienna, Austria, pp. 1105-1111.
- Shah, H. R., & Martinez, L. R. (2016). Current approaches in implementing citizen science in the classroom, *Journal of microbiology & biology education*, 17(1), 17-22.
- Trinchero, R. and Robasto, D. (2019). *I mixed methods nella ricerca sociale*, Milano: Mondadori Education.