

The Quid Sapienza model: methods, tools and quality in the innovation of university teaching 4.0

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Abstract

The paper presents the approach adopted by Sapienza University to guide its professors through didactic transformation, analysing findings from a 2022 survey involving 465 professors who participated in the project on the Quality of Educational Innovation (Quid). The data have been analysed to identify commonly used teaching methods and learning strategies related to three approaches outlined in the theoretical framework (constructionist, interactionist, and socio-cultural approach). The results are also discussed in light of limits and critical issues on innovative didactics and digital transformation that emerged from interviews with figures responsible for innovative teaching projects in selected Italian and European universities. Digital transformation in the academic field does not imply introducing one digital or multimedia tool over another. Instead, it involves a cultural redefinition of the training objectives of the university system, recognising its potential in the face of social and cultural transformations in this millennium. The paper is also part of the studies conducted within the European Virtual Auditorium project (ERASMUS-EDU-2023-PI-FORWARD-LOT1; 2024-2027) on the evolution of innovative teaching.

Keywords: *digital transformation; didactic innovation projects; innovative didactics; used teaching methods; learning strategies.*

1. Introduction

Sapienza University of Rome was among the first Italian universities to promote a working group and a project on the Quality of Educational Innovation (Quid). Over the last six years, the Quid initiative has dedicated resources to training Sapienza University's faculty through a compulsory two-year program to cultivate expertise in educational innovation. A total of 555 newly recruited researchers actively participated in various biennial editions. The project, which includes participant observation of the applied teaching methods, working group discussions

and training sessions, has registered an average annual increase in participation of +29.8%. Concurrently, Quid continues to offer ongoing training accessible to all 3,576 professors.

The primary objectives of the Quid project revolve around establishing a community of professors proficient in maintaining elevated standards of student education, ensuring a continuous evolution of effective and efficient teaching methodologies, and advocating for the integration of technological resources. These objectives are recognised as pivotal in facilitating the successful implementation of student-centred approaches.

The initiative operates on two foundational assumptions concerning its commitment to educational innovation within this context. Firstly, it acknowledges blended learning methods as complementary rather than substitutive to traditional and in-person teaching. Secondly, the project asserts that technologies support innovative teaching methods; however, more than the sole use of technology is required to guarantee the quality of teaching.

Considering these two assumptions, the paper delves into the approach adopted by Sapienza University to guide its professors through didactic transformation. This guidance aims to optimize the utilization of new technologies in teaching and learning activities. Specifically, the paper pursues two primary objectives: 1) identification of commonly used teaching methods and learning strategies aligned with the three approaches outlined in the theoretical framework (constructionist, interactionist, and socio-cultural approach); 2) an evaluation of the university's provision of adequate support to its professors in light of the continual opportunities and potential limitations presented by technologies. Additionally, it seeks to understand the university's perspective on potential future developments in the digital transition or transformation (Casalino et al., 2021; Ceravolo, et al., 2023; Hölscher et al., 2018).

2. Theoretical framework

As Al Rawashdeh et al. (2021) and Aditya et al. (2022) propose, the technological evolution in the education field constitutes a complex, dynamic, and ever-evolving system that necessitates a long-term strategy. Therefore, no one correct approach exists; instead, embracing a perspective of continual experimentation capable of progressing over time and offering flexible solutions is advisable. Notably, contemporary educational approaches endorse a holistic viewpoint, suggesting the integration of insights derived from various pedagogical perspectives, including the constructivist, interactionist, and socio-cultural approaches (Nguwi, 2023).

The first approach, the constructivist one, is grounded in the psycho-social approach (Inhelder, 1966; Vygotsky & Cole, 1978) and underscores the significance of education as a mode of knowledge construction, favouring the development of critical thinking. This approach employs formulating and verifying hypotheses through experiments, such as problem-solving (Omodan & Tsotetsi, 2020). The most advanced technological modality is offered by transformative

learning facilitated by immersive experiences, for instance from virtual reality (VR) and augmented reality (AR). Another effective method is the flipped classroom.

The second approach, the interactionist one, forms the foundation of collaborative learning, concentrating on collaboration among students in teams, both within and outside the classroom, to engage in debate, group work, peer review, brainstorming, and gamification activities. Given the recent integration of AI in gamification, some scholars suggest emphasising not only the results of tasks but also the value of creativity that students must employ to achieve the outcome (Nguwi, 2023).

The third approach, the socio-cultural one, directs attention to influences dependent on context, institution, and students' socio-cultural and relational characteristics. From the socio-cultural perspective, the technology leverages the creation of personalised learning environments tailored to the context, such as the use of dedicated digital platforms for learning, often combined with social networks, chat, and messengers to foster a sense of belonging to the learning community.

These three approaches encompass a variety of teaching styles, understood as a set of didactic strategies that educators employ by combining or prioritising various codes (verbal, iconic, kinesthetic), more or less directive communicative modes, and individual or group. In turn, teaching styles or strategies intertwine with diverse learning styles, both in the sense of promoting and being influenced by them, with consequences on learning outcomes (Prosser et al., 2003). However, Zhang et al. (2022) demonstrate that current educational systems are ill-equipped to meet the evolving needs of training and learning, especially in terms of digital transformation. Indeed, there are several structural, prospective, methodological, and ethical issues that we will discuss in the conclusions.

3. Methodology

This study aims to comprehend how Quid contributes, within Sapienza University, to raising awareness among its professors to adopt innovative teaching and learning methodologies, experimenting with practices and technologies with the perspective of continually improving the quality of student education. Another goal is to foster a common, widespread, and shared culture of teaching quality that avoids deviations and cultivates good practices in a balanced manner, attentive to the needs and characteristics of its students. For this reason, this paper presents some results related to adopting commonly used teaching methods and learning strategies. This paper builds upon findings from a 2022 survey involving 465 professors who participated in the first four editions of Quid. The data have been analysed to identify the redesigned model of certain Quid activities aimed at situating professorial training within the latest scientific and cultural debate on the digital transformation of education. The outcomes of these actions will shape the future decisions of the university's governance concerning the

approach to teaching in the coming years, considering technological, ethical, and methodological interventions to support professors and students.

We have conducted a mono and bivariate analysis of the collected data. Subsequently, a linear regression analysis utilising the Pearson regression coefficient (r), ranging from -1 to 1, was performed to assess the significance of applying methods, strategies, and tools in relation to disciplinary macro-sectors. This analysis aimed to determine whether noteworthy differences exist among educators in different scientific domains. Moreover, the regression analysis was extended to explore the relationship between variables (RI). This extension sought to elucidate the degree of linearity between teaching perspectives (DTPI) and the ensuing teaching and learning strategies (TLSI). The objective was to understand how much the former influences the latter. This investigation aimed to ascertain whether and to what extent teaching innovation, encompassing both pedagogical perspectives and training strategies, is facilitated by digital transformation.

4. Outcomes

Considering the theoretical framework discussed above, we have examined the position of professors who participated in Quid regarding the use of pedagogical perspectives, teaching and learning strategies, and technology usage. Firstly (see Table 1), in adopting a holistic perspective, there is a significant prevalence of the constructivist perspective underlying the most utilised teaching methodologies.

Table 1. The impact of pedagogical perspectives in innovative holistic methodology. Source: Sapienza (2022). MR% (Multiple Responses %).

The prevailing approach (DTPI):	Health area	Scientific area	Sociopolitical area	Humanistic area	TOT.
Constructionist	50,2%	37,4%	27,2%	31,6%	36,6%
Interactionist	21,7%	20,3%	26,8%	27,7%	24,1%
Socio-cultural	18,6%	22,8%	27,8%	25,9%	23,8%
Hybrid	9,5%	19,5%	18,0%	14,8%	15,5%
TOT. RESPONDENTS	35,9%	31,5%	19,6%	13,0%	465
<i>(r)</i>	0.977	0.997	0.983	0.996	

Respondents preferred the flipped classroom, mainly in the hard sciences, coupled with problem-solving activities and case analysis to foster critical thinking. In the socio-political and humanistic areas, a combination of perspectives emerges, with a prevalence of the constructivist perspective in the humanistic field and the socio-cultural perspective in the socio-political field. This increased heterogeneity also leads to more experimentation with interactive learning

strategies. Overall, it is evident that Quid contributes to stimulating the experimentation of diversified methodologies in favour of teaching quality.

The more diversified the experimentation with teaching practices, the more it fosters the adoption of student-centred teaching and learning strategies. Across disciplinary areas (see Table 2), professors highlight an evident prevalence of adopting interactive transmission strategies. However, in the humanities field, many educators still prefer dialogic transmission strategies (as indicated by low linearity ($r=0.91$)). We observe the same trend in the medical field, although to a lesser extent. In the scientific and socio-political areas, on the other hand, professors are more inclined to use collaborative strategies in addition to interactive ones.

Table 2. The adoption of key teaching and learning strategies. Source: Sapienza (2022). MR%

Teaching and Learning Strategies (TLSI):	Health area	Scientific area	Sociopolitical area	Humanistic area	TOT.
Trasmissive-dialogical strategy	29,2%	26,8%	28,7%	32,8%	29,1%
Interactive transmission strategy	42,2%	41,0%	40,6%	44,3%	41,4%
Collaborative-innovative strategy	28,6%	32,2%	30,7%	22,9%	29,5%
TOT. RESPONDENTS	33,2%	32,0%	21,7%	13,1%	465
(r)	0.999	0.998	0.999	0.091	
RI (DTPI x TLSI) = 0.949					

The study, however, also highlights some critical issues emerging from the relationship among the examined variables. The constraints of digital transformation limit opportunities to combine interactive and collaborative strategies (RI = 0.926). For this reason, they tend to anchor professors' teaching approach to specific methodological perspectives rather than expand their experimentation (RI = 0.804).

In this regard, it is understandable that Quid has decided to modify it, unlike its approach until 2023. Traditionally, the training of professors entering Sapienza is organised over two years. In the first year, professors work in small groups (3-4 individuals from different disciplinary areas), observing their teaching activities and discussing and experimenting with teaching and learning methods and strategies. In the second year, before the approach changed, they were organised into larger groups within their disciplinary area to compare their teaching experiences and individually reorganise their teachings. The new organisation envisages that, during the second year, irrespective of their disciplinary area, they, in addition to individual interventions, contribute to delving into specific issues to identify solutions and proposals that they will present to the University's governance.

Among the discussion topics, updated in each biennial edition of Quid, are those concerning digital transformation to examine opportunities and limitations, the review of teaching and evaluative methods considering not only emerging technologies but also the value of interdisciplinarity, the expansion of educational experiences in other national and international contexts, the use of micro-credentials in university education, and examining how better to enhance the virtuous relationship between teaching and research. All these aspects allow for a more comprehensive view of transformation from a technological perspective and teaching and learning methods.

Furthermore, this year, the University has specifically modified the questionnaire track for evaluating the teaching activities of professors and students to identify teaching methods and strategies and track which tools are most used and which are most requested to facilitate more interactive and collaborative activities. Therefore, it will be possible from next year to contemplate such an extensive audience, encompassing all professors and students of the University on these aspects. However, this is an essential signal of the governance's attention to these aspects.

5. Discussion and Conclusion

Beyond the survey, a section of the research delves into national and European landscapes through interviews with figures responsible for innovative teaching projects. In Italy, the study investigated nine out of ten so-called mega-universities (with over 40,000 students) (Milan, Turin, Padua, Bologna, Florence, Pisa, Naples Federico II, and Sapienza). Each of these institutions has dedicated training projects, albeit with distinct organisational characteristics, and some results have been discussed in Valentini & Mazza (2023). The European comparison has been extending to other universities (Free University of Brussels, University of Tübingen, Autonomous University of Madrid, Aix-Marseille Université, University of Stockholm, Paris Lodron Universität Salzburg, UNIL | Université de Lausanne) chosen for their affiliation with the CIVIS network, Europe's Civic University Alliance to which Sapienza is joined, funded by the European Commission.

From these studies and literature review, essential insights have emerged on optimizing digital transformation to enhance interactive and collaborative educational strategies. In summary, four critical dimensions respond to the main issues derived from scientific literature not presented in the theoretical framework due to space constraints.

At the **structural level**, figures responsible for innovative teaching projects emphasize universities' need to support the transformation of educational processes. This support involves intensified training, particularly for strengthening digital skills (some universities have established dedicated centres for this purpose) and implementing policies that support professors while recognising their efforts. However, emerging applicative limits from technical

issues related to privacy, security, and insufficient support infrastructure have also been identified (Dahalan et al., 2023).

At the **prospective level**, there is a clear consensus among interviewees and in the literature on advocating student-centred educational models in universities. While the overall approach is not in question, there is a need for focused attention to overcome cultural, social, and digital barriers. This is essential to ensure full accessibility and inclusivity for all students, with a greater emphasis on designing learning and teaching models that cater to diverse student needs.

At the **methodological level**, suggestions have emerged for increased student involvement in teaching activities (e.g., through strategies like flipped classrooms and gamification) and in the design phases. This enhances teaching effectiveness and improves relationships between professors and students (Perry et al., 2023). Another crucial aspect is the potential to mitigate plagiarism risks by leveraging innovative technological tools to enhance creative aspects (Sharples, 2022).

Finally, at **the ethical level**, an interesting proposal arising from interviews is the introduction of digital ethics courses into university study programs. This aims to promote greater awareness regarding the boundaries between lawful and unlawful practices concerning plagiarism in university classrooms and subsequent work activities.

Considering professors' positioning regarding teaching methods based on pedagogical perspectives, teaching and learning strategies, and technology use, alongside the briefly mentioned limits and critical issues, the overall perspective goes beyond introducing one digital or multimedia tool over another. Instead, it involves a cultural redefinition of the training objectives of the university system, recognising its potential in the face of social and cultural transformations in this millennium. The goal is to understand and anticipate the necessary changes and the paths to be taken. Future research will delve deeper into adopting teaching and learning strategies and the impact of pedagogical perspectives in the European University of the CIVIS network to achieve this goal better.

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