Women's Empowerment as an Emerging Dynamic in Italy's Largest Telematic University^

Valentina Grion°, Irene Gianeselli⊗

Abstract
Despite the efforts of Italian universities in recent years, gender equality in higher education remains far from fully realised, with persistent segregating models in several countries. Drawing upon this state of affairs, Mezirow and Marsick's (1978) *Transformative Learning Theory*, which initially emerged from the observation of female emancipation through the American College Re-entry Programs between the 1960s and 1970s, provides significant insights into current gender relations within educational contexts. With reference to the theories of Mezirow (2000) and Bateson (2021), this article aims to analyse the role of distance learning in fostering women's empowerment. Starting with an analysis of student population data from Italy's largest telematic university, the paper considers how distance learning supports women's educational fulfilment and identifies emerging "invisible dynamics" that warrant greater attention from the Italian higher education system.

Key words Gender equality; Women's empowerment; Telematic universities; Distance learning; Transformative Learning Theory; Emerging educational dynamics.

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° Dipartimento di Scienze dell'educazione e dello Sport; Università Telematica Pegaso (IT); e-mail: valentina.grion@unipegaso.it.

⊗ Facoltà di Scienze della Formazione, Libera Università di Bolzano (IT); e-mail: irene.gianeselli@unibz.it.

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1. Introduction

Already in 2000, with the paper *The incorporation of women into higher education: Paradoxical outcomes?*, Karen Bradley examined gender segregation across academic disciplines during the period 1965-1990, emphasising that women in this period tended to graduate in artistic and humanities fields, while men pursued studies in the natural sciences or mathematics, irrespective of the sociodemographic and economic factors of the female students involved in the survey. Even the economic variable in Bradley's (2000) analysis proves to be inconsequential and rather mirrors trends observed in the labour market. Bradley's investigation proves quite valuable for understanding how gender inequalities from the previous century endure within the contemporary Higher Education context: Barone and Assirelli (2020) highlight how gender segregation in academic disciplines remains a highly prevalent factor, with the guidance provided by upper secondary education being a decisive variable, particularly in Italy. This is further exacerbated by a general stagnation in the integration of university pathways in recent decades, where gender segregation has solidified at a nearly identical level, with a qualitatively similar pattern across various nations, as Barone (2011) notes. The researcher also suggests that the cultural forces underpinning gender segregation are notably resilient, as they are sustained by a series of structural developments within educational and occupational institutions. Building on this review, Transformative Learning Theory was identified as a theoretical framework potentially effective for women's empowerment in education. Jack Mezirow and Victoria Marsick (1978), indeed, began their research by focusing on a national field study which examines factors influencing the success of women's re-entry programs in community colleges. The first section of their report explores the process of perspective transformation, focusing on how women overcome culturally induced dependency roles and develop self-confidence during their re-entry program experience at the college. The second section addresses program dynamics, including program types, goal setting, and relationships within the college. The final section discusses methods for assessing change, including psychometric approaches and perspective discrepancy. Based on the state of the art, which highlights the current gender disparity, and considering Mezirow's (2000) Transformative Learning Theory, we use data from the student community of the largest university to adopt e-learning to identify emerging patterns concerning the female population. In this way, we aim to verify whether the telematic model reveals previously unseen needs within the traditional institutional university structure, adopting a scientific research perspective in the educational field that is sensitive to current trans-feminist

(Carrera & DePalma 2020; Christiaens 2024; Tudor 2023) and intersectional (Tefera, Powers, & Fischman) ethical issues. The research perspective also incorporates Nora Bateson's (2021) suggestion to evaluate her novel concept of *Aphanipoiesis* wich combines two Greek words (*Aphanis* and *poiesis*) to describe the process by which life unfolds toward vitality in unseen ways, with roots linked to concepts such as phantom, phenomenon, and *autopoiesis*, as developed by Maturana and Varela (2012). In summary, the aim of this paper is to explore how the transformative processes of women can be analysed, focusing on the invisible dynamics elicited by the telematic institutional structure that influence their learning and, consequently, their potential for full emancipation.

2. Theoretical Background

2.1 Trasformative Learning Theory

As Romano (2022) brilliantly highlighted in his most recent post-feminist analysis (Wilkes, 2015), the Transformative Learning Theory is the result of a feminist approach. In the monograph *Education for Perspective Transformation: Women's Re-entry Programs in Community Colleges* (Mezirow & Marsick, 1978), the researchers examine a highly relevant phenomenon. Between 1970 and 1975, they analysed 36 case studies and found that the number of women aged 25 to 34 attending college increased by more than 100%. In the early 1970s, a proliferation of Re-entry Programs emerged in America, particularly for middle-class women. The study reveals that by encouraging a critical appraisal of the culturally determined sex stereotypes that women have internalized and defended, they open new vistas for self-realization (1978: 8). For instance, a study of 145 women in an Illinois re-entry program found that at the start, only 20% considered themselves active feminists, and 29 % percent reported satisfaction with the traditional feminine role. After their college experience, almost 90% percent reported a shift toward the feminist viewpoint, over 75% percent identified as active feminists, and only 9% percent still adhered to traditional perspective on women social *status*. So, when Mezirow formalized his Transformative Learning Theory in 1978, he drew a clear reference to Ernani Fliore's indication that "conscientization is the process by which movement of the development of consciousness as existence is reflectively reproduced" (1971: 123). His educational practice, based on the field study of women participants in college re-entry programs and consciousness-raising groups, emphasizes how a key aspect of adult development and the type of learning that is most distinctly adult involves

becoming aware that one is trapped in their own history and continuously reliving it (1978). This awareness triggers a process of perspective transformation, leading to a structural change in how we perceive ourselves and our relationships. If the culture allows, we progress toward perspectives that are more inclusive, discerning, and integrative of experience. We shift from uncritical, organic relationships to more contractual relationships with others, institutions, and society. Perspective transformation reshapes the criteria for valuing and acting, and behaviours change often results from this transformation. As Mezirow highlights (2018), the *Transformative Learning Theory*, introduced in 1978 by the researcher, has also faced criticism for downplaying the importance of social action. Edmund O'Sullivan and colleagues (2016) view the concept as a cosmological shift that extends beyond the political focus of critical pedagogy. Meanwhile, constructivist developmental psychologists argue that human development follows a predictable sequence, ultimately leading to an adult's capacity for critical self-reflection and reflective judgment. Additionally, Patricia Cranton (2016) successfully integrates Jung's theory of psychological types with transformative learning, suggesting that learners' psychological predispositions shape their habitual ways of thinking.

2.2 Aphanipoiesis: The invisible dynamics of learning

In the study of *aphanipoiesis* (Bateson 2021), the hypothesis identifies pre-habituated perceptions through which new information is filtered. Familiarity with one context helps in understanding another, enabling the exploration of newness through known experiences. This abductive process opens a space for unseen contributors to emergence. Changes, often leading to obsolescence rather than relevance, are impossible to track due to their multifaceted nature across different ecological contexts. These shifts leave traces to be understood later, disrupting the search for clear causality. From this, *Stochastic Fractal Flexibility* emerges as a useful framework for navigating complex, evolving systems with unforeseeable responses. Bateson suggests this dynamic, adaptive approach to engage with the complexities of reality, which, in our contemporary context, proves valuable, particularly in addressing trans-feminist and intersectional educational challenges. Bateson's theory complements the paradigm proposed by Mezirow, which the researcher outlines through the 10 phases of cognitive reconstruction of the learner's being through the analysis of a "disoriented dilemma" (1997). Bateson's approach, however, first addresses reality by considering its inherent complexity and the necessity of transforming personal interpretive paradigms, with the

understanding that these paradigms often represent biases rather than opportunities.

3. Materials and method

The study is based on the descriptive analysis of data published in the *Gender Balance Report 2024* by the Pegaso Telematic University. The data collected from the report is secondary data, meaning that it was publicly available[1]. and derived from the university's official enrolment records. However, as secondary data, there are limitations regarding data completeness and potential biases in its initial collection (e.g., missing data or variations in data reporting). Such factors cannot be controlled *a posteriori*, as it is, in fact, a meta-analysis combining both quantitative and qualitative design. The sample size included in the Gender Balance Report is significant, encompassing a substantial proportion of the student population at Pegaso University. For its preparation, Pegaso Telematic University follows the Guidelines for Gender Balance in Italian Universities, developed by the CRUI Group – Conference of Rectors of Italian Universities, adapting them to the specificities and needs of its institutional context. The work primarily relies on internal data provided by the university's relevant departments, supplemented, where necessary, with information from the database of the Italian Ministry of University and Research.

The target population consists of students enrolled during the academic years 2021-2023 aged between 24-65, enrolled in bachelor's degree (LT), and master's degree (LM). The student population composition in the academic years 2021/2022, 2022/2023, and 2023/2024, divided by age groups and gender (female and male), reveals a clear prevalence of younger students, particularly in the 25-34 age cluster, which is the most significant demographic. The gender distribution shows a male predominance in younger age groups, especially in the 25-34 range, with a notable peak for males in the 2021/2022 academic year.

For the descriptive analysis, statistical measures such as frequencies, percentages, and cross-tabulations were used to understand the gender and age group distributions within the student population. These methods allow for a clear understanding of trends and demographic shifts over the three years. The next largest group is students aged 24 or younger, with consistent growth over the three years. Age clusters over 35 years (35-44, 45-54, 55-64, and >65) show progressively decreasing percentages, with a higher female presence, indicating

[1] https://www.unipegaso.it/ateneo/documenti-ufficiali.

that women are more likely to start or continue their studies at older ages. Male participation in these age categories remains low and stable.

To further understand these patterns, a conceptual analysis (Kahn & Zeidler, 2017) was applied through Mezirow's *Transformative Learning Theory*, which offers a lens through which the educational experiences of women are interpreted as a form of personal and professional transformation. This approach links the desire for continued education with the process of empowerment and emancipation. The regions in Italy with the highest frequency of female students (10-20%) are Campania and Sicily, which represent the areas with the highest percentage of enrolments for both female and male students. However, there is a gradual decrease in enrolment percentages for both genders in these regions over the years, suggesting a potential redistribution of students to other regions. This geographical shift was also observed through descriptive mapping and regional comparisons, identifying potential socio-economic and sociodemographic factors influencing students' enrolment decisions. Indeed, in contrast, regions like Lombardy, Piedmont, Emilia-Romagna, and Sardinia show a steady increase in female representation, indicating growing appeal for female students. The percentage of female students in three such culturally and socio-economically different regions (Lombardy, Campania, and Sicily) suggests that online universities are meeting the need for higher education for women, even in traditionally economically advantaged regions like Lombardy. This data seems to reflect the desire of Italian women, particularly those over 35, to emancipate and specialize through online study programs that allow them to work, manage personal and family responsibilities, and continue their education without sacrificing their independence. The study also acknowledges the potential limitations in the data, such as the exclusion of socio-economic factors or personal circumstances that could further explain the increasing enrolment of women, particularly in older age groups. The paper focus is specifically on the data related to students enrolled in bachelor's degree (LT) and master's degree (LM) programs. Ethical considerations regarding the use of publicly available data were taken into account. Since the data is anonymised and aggregated, there were no concerns about personal confidentiality. Nevertheless, the limitations of secondary data – such as the absence of in-depth qualitative insights – should be recognised, as they prevent a deeper understanding of individual students' motivations or challenges.

4. Descriptive analysis

In the past three years, the composition of the student population has shown

an increasing presence of women compared to the total population, with a clear trend towards a rise in their percentag. In the 2021/2022 academic year, the total student population was 100853, of which 43727 were women, corresponding to 43.40% of the total. This data provides an initial picture of gender distribution, highlighting a relative balance, although still lower than that of men. In the 2022/2023 academic year, the total population rose to 113733 students, with 56676 women, amounting to 49.90% of the population. During this year, the percentage of women saw a notable increase, nearly reaching parity with that of men. This growth suggests a gradual shift in the gender balance, with the female representation growing significantly. The positive trend continued into the 2023/2024 academic year, when the total student population rose to 132809, with 68236 women, equating to 51.40%[2]. For the first time in three years, women made up more than half of the population, marking an important shift in the demographic composition. These data suggest a growing gender parity over the years, with a consistent increase in the percentage of women within the total student population. The trend may reflect societal and economic changes that influence gender distribution, as well as factors related to birth rates, migration, and other demographic aspects. Overall, the gender distribution remains balanced over the three years, with a male majority in the first year, followed by a female majority in the subsequent academic years. The data also suggest that the presence of female students is predominant in master's degree programs (LM), while in single-cycle bachelor's programs (LT) and single-cycle master's programs (LM a ciclo unico), there is a slight prevalence of male students. Specifically, data on enrolment in STEM-related degree programs offered by the University (L-7 Civil Engineering, L-31 Computer Science, LM-26 Safety Engineering) highlight a greater male presence in bachelor's degrees in the 2021/2022 academic year, with 68.95% (58.95% female); in the 2022/2023 academic year, 71.63% (59.65% female); and in the 2023/2024 academic year, 72.76% (61.49% female). Conversely, there is a predominance of female students in STEM master's degrees, with 41.05% of students being female and 31.05% male in the 2021/2022 academic year, 40.35% in the 2022/2023 academic year (28.37% male), and 38.51% in the 2023/2024 academic year (27.24% male). with these percentages referring to the total number of female and male enrolments in STEM areas, respectively. This analysis of STEM enrolment data reveals an interesting gender dynamic: while male students predominate in bachelor's programs, female students surpass males in Master's degree

[2] The precise statistics regarding the gender distribution in the sample are provided by the Italian Ministry of University and Research (Ministero dell'Università e della Ricerca, or MUR) https://ustat.mur.gov.it/dati/didattica/italia/atenei-non-statali/napoli-pegaso.

programs. This trend suggests that, despite initially lower participation in bachelor's degrees, women are more likely to continue their studies and specialize in STEM fields.

Between 2021 and 2023, the Telematic University Pegaso conferred 77,048 degrees, with a slight female majority (51% women, 49% men). This gender difference is minimal in the 2021/2022 academic year (women exceeding men by just 11), but becomes more pronounced in the following years, with women surpassing men by around 700 in 2022/2023 and 1,600 in 2023/2024. In terms of grades, women dominate in higher ranges (106-110 and 110 with honors), especially in the 2023/2024 academic year. Men are more prevalent in the lower grade ranges (91-100) in the first two years, but this gap narrows in the third year.

5. Conceptual analysis

Based on the *Gender Balance Report 2024*, which focuses on the analysis of diversity and inclusion among students at the Pegaso Telematic University, the descriptive data concerning the student composition over the three academic years 2021/22, 2022/23, and 2023/24, covering enrolments in bachelor's degree (L), master's degree (LM), suggest the following:

1. the gender distribution remains balanced throughout the period under consideration, with a male predominance in the first year, and a reversal towards the female component in the subsequent two years especially for the specialistic courses.
2. In STEM fields, female students are underrepresented in the early years of university education. However, they show greater determination and a higher success rate in reaching higher levels of specialization compared to male colleagues.
3. Examining the composition by age group, there is a clear predominance of students in the younger age brackets (particularly between 25 and 34 years old), with male students being more prevalent in this category. However, in the older age groups (35 and above), female students are in the majority: they tend to embark on and/or continue their university studies at a more advanced age. In this regard, it can be hypothesised that a process of "perspective transformation" (Mezirow, Marsick 1978) is underway, as the educational experience has not only facilitated the acquisition of knowledge but also the construction of a new sense of self and expanded possibilities for female students over 35.
4. Data regarding student retention from the first to the second year show a decrease over the period under review. The percentage of female students

remains consistently higher than that of male students, suggesting greater persistence among female students in their programmes. However, the gap between the two groups appears to decrease slightly over the years.

These findings are particularly significant as they highlight an intriguing aspect: women who pursue their studies at a later age seem to benefit from the unique structure of the telematic university. It emerges that female students are highly motivated and determined compared to their male counterparts in successfully completing their academic programmes, including those in STEM disciplines. This aligns with the insights of Mezirow and Marsick (1978), who argue that access to education actively fosters the transformation of women's interpretive paradigms, ultimately reshaping their view of reality and enabling them to abandon gender and status stereotypes. This suggests that our hypothesis – that the institutional structure and teaching practices of the telematic university bring to light needs that would otherwise remain invisible in the educational context for women – may be considered valid. The percentage of female students is higher in three culturally, economically, and socially different Italian regions (Lombardy, Campania, and Sicily), suggesting that, regardless of these variables, the structure of the online university model addresses a need for education among women who are no longer very young that was previously unmet by traditional, non-e-learning universities. In other words, online universities seem to meet the educational and emancipatory needs of female students, allowing them to pursue higher education without sacrificing their careers or personal and family responsibilities, which often hinder specialized education for women over 35. Furthermore, Jack Mezirow's *Transformative Learning Theory*, empirically tested for women over 25 participating in Re-Entry Programs in U.S. colleges in the 1960s and 1970s, aligns with the latent needs of contemporary Italian female students accessing online education.

Conclusions

In light of this reading, the subject matter aligns with the current needs of educational research, intertwining gender issues and adult learning within Lifelong Learning. Data highlights the need to rethink university education, offering courses and structures that do not require physical attendance, to support female emancipation and fulfilment through e-learning, as Hakimi et al. (2024) suggest. This finding, which warrants further investigation in future academic years, aligns with trans-feminist and intersectional perspectives, as contemporary society's increasing complexity demands access to education – both Higher Education and Lifelong Learning – for all.

We do not find it appropriate to offer simplistic solutions or slogans to guide practice here. We believe it is essential to emphasise that, within the scope of this study, future perspectives deserve exploration. It is worth noting that the application of Mezirow's *Transformative Learning Theory* to simulation in healthcare education has already been studied by Briese and colleagues (2020), maybe specific training programmes based on this framework could facilitate female students and the broader student community in achieving personal empowerment. For instance, designing a qualitative investigation through interviews, focus groups, or targeted questionnaires for female students across various age groups and academic paths could strengthen the transformative paradigm's application for interpreting this phenomenon. Comparing these data with those from other telematic universities would also be useful to identify whether similar or differing patterns emerge, and how these may be influenced by Italy's socio-cultural context.

Applying Bateson's concept of *aphanipoiesis* should help the research community analyse the hypotheses that the phenomenon itself appears to manifest, free from bias and prejudice. In this case, we observe that the phenomenon of telematic universities is expanding, and examining the emerging processes of distance education is an increasingly important topic. If aimed at ensuring women's access to knowledge and career opportunities, it could have a truly revolutionary impact, contributing to the realisation of gender equality and, concurrently, intersectionality. E-learning, in a complex world, should address all minorities, becoming a democratic tool with a intersectional purpose. In other words, allowing the invisible dynamics of education means embracing what the phenomena themselves suggest, as Bateson (2021) posits: our ability to adapt socially, politically, and economically through *Stochastic Fractal Flexibility* will determine our capacity to recognise that online universities offer a valid opportunity for women and political transformation, socially and economically diverse, yet united by the same desire for emancipation and fulfilment through access to education.

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