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Fast and focused: A targeted approach to changing pre-service teachers' images of scientists

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Abstract

Stereotypical imagery of scientists is detrimental to effective and inclusive science education. Many elementary pre-services teachers often hold onto these images, creating an unconscious bias limiting their effectiveness to both teach science content and discourage some groups from entering the scientific field. Proactive and targeted interventions could help mitigate this bias and provide a more inclusive perception of actual scientists. This one-group pretest-posttest quasi-experimental study investigated changes in the perceptions of elementary pre-service teachers regarding scientists. Thirty-three participants completed the Draw-A-Scientist Test before and after a 25-minute intervention aimed at challenging stereotypical views of scientists. The Draw-A-Scientist Test (DAST) checklist assessed participants' depictions of scientists. The results showed a significant reduction in stereotypical imagery post-intervention: 30 participants depicted less stereotypical scientists, while three showed no change. Statistical analysis using the Wilcoxon signed-rank test revealed a significant difference in DAST scores (Mdn = 2 posttest vs. Mdn = 7 pretest, z = -4.805, p < .001). These findings suggest that brief, targeted interventions can effectively alter the naive conceptions of scientists held by elementary pre-service teachers. Implementing such succinct and focused interventions in educator preparation programs may foster more inclusive representations of scientists, potentially inspiring diverse student populations to envision themselves as scientists. This research provides a foundation for promoting accurate and varied representations of scientists in education without the need for significant curricular modifications. The findings of this study indicate that once deficits are identified, well-designed, brief, and targeted interventions can alter elementary pre-service teachers' perceptions, setting the foundation for accurate and inclusive science instruction at the elementary level.

Keywords: DAST, Science Education, Scientist Stereotypes

Introduction

Over the past seven decades, considerable research and writings have discussed the stereotypical imagery associated with science and scientists. Elementary pre-service teachers' perceptions influence their approach to science education, affecting their ability

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to foster an inclusive learning environment and promote an accurate depiction of scientists to their students (Howitt, 2007). Pre-service teachers often form stereotypical images of scientists, influenced by popular culture and limited exposure to scientific work. This can unintentionally perpetuate misconceptions about who can become a scientist and what scientific endeavors truly involve (Ateş et al., 2020). Teachers with stereotypical images of scientists can develop unconscious biases that impact their teaching practices and instructional activities, potentially discouraging underrepresented groups from pursuing careers in science (Hand et al., 2017). Assignments and interventions highlighting the contributions of women and minority scientists can help counter stereotypes. These initiatives can reduce student biases, improving their ability to connect with scientists (Rhinehart, 2022).

The underrepresentation of certain demographics, such as women and minorities, in scientific fields is a pressing issue that necessitates proactive intervention (Rodriguez et al., 2021). Teacher-led interventions focusing on cultural and gender diversity in science can significantly reduce negative stereotypes of scientists in young children, with some changes persisting in the long term (Shimwell et al., 2021).

This study examined the impact of an educational intervention on the perceptions of elementary pre-service teachers regarding scientists. By using the Draw a Scientist Test (Chambers, 1983), the study sought to assess changes in pre-service teachers' perceptions before and after a targeted intervention training. Stereotypical imagery of scientists has been pervasive throughout this term (Finson, 2002; Finson, et al.,1995; Medina-Jerez, et al., 2011; She, 1995) coupled with limited exposure to science education in elementary school (Plumley, 2019). Understanding the factors that make science curriculum relevant can help improve learning and interest in science while respecting diversity and promoting citizenship (Christidou, 2011).

Literature Review

A student's educational experience and cultural depictions shape and influence their perceptions of scientists. These stereotypical views often involve depictions of white males, which has the potential to discourage diverse groups from entering STEM careers (Rhinehart, 2020). The stereotypical scientist imagery, often depicted by a white male, is reinforced in various media sources and educational materials (Rhinehart, 2022). Even as women are more represented in science, children still associate science with men. This association becomes more pronounced as they age, suggesting that science is still perceived as a male-dominated field (Miller et al., 2018).

The manner in which scientists are represented in the classroom, whether intentionally or unintentionally, shapes how students perceive scientists (Ivgin et al., 2021). Narrow scientific stereotypes, often reinforced by media and educational materials, portray scientists primarily as male figures in lab coats, isolated in laboratories, overlooking the diverse reality of scientific work (Chimba & Kitzinger,

2009). These biases can deter underrepresented groups from participating in the scientific community, thereby reducing the diversity and inclusivity of the scientific workforce (Cheryan et al., 2015; Williams et al., 2019).

Interventions aimed at countering stereotypical views of scientists emphasize scientific literacy, including discussing scientific processes by diverse scientists (Kelp et al., 2023). When educators address these misconceptions directly, they can effectively neutralize stereotypical portrayals and promote a more accurate understanding of the scientific process (Borah & Cook, 2017). Conducting targeted interventions focusing on countering these stereotypical scientific perceptions may increase career aspirations among underrepresented groups in the science field (Nguyen & Riegle-Crumb, 2021). Science instruction that emphasizes the human aspect of science highlights the true nature of scientific inquiry. It decolonizes science content and provides a more personal and culturally relevant perspective (Tshuma, 2024).

Educational interventions, followed by appropriate instructional activities that highlight a diverse representation of scientists, can help restructure stereotypical misconceptions. These interventions can foster a stronger individual connection to scientists, increasing individual performance in science courses (Schinske et al., 2016). Fostering a more inclusive educational environment by incorporating a more diverse representation of scientists can combat male-dominated stereotypes in science (Rhinehart, 2022). Interventions by well-trained elementary school teachers can challenge and reshape stereotypical views of scientists (Shin et al., 2015). Targeted professional development programs that promote diverse representations of scientists— such as more female scientists and those working outside traditional labs—enhance students' understanding and appreciation of science as a career (Shea, 2018).

The Draw-A-Scientist Test (DAST; Chambers, 1983) is utilized in educator preparation programs to determine preconceived and stereotypical conceptions of preservice teachers (Miele, 2014; Shea, 2018). Interventions and activities involving DAST improve preservice teachers' understanding of inquiry-based science and alter their beliefs (Eckhoff, 2017). The DAST, used as a reflective exercise, allows preservice teachers to acknowledge their biases and stereotypes about scientists, reconstructing their beliefs, pedagogy, and attitudes toward science (Miele, 2014). Stereotypical perceptions of scientists vary in educator preparation programs, with secondary science method students generating fewer stereotypical representations than elementary science method students (Milford & Tippet, 2013).

Research Purpose, Questions, and Hypotheses

When students are given opportunities to learn about scientific endeavors, they are more likely to appreciate the diverse nature of scientists and their work (Rosenthal, 1993). How teachers discuss science can impact their students' interest in science-related studies and careers (Christidou, 2011). Pre-service teachers who understand scientists accurately are more likely to promote inclusivity in science careers, while those with

negative or stereotypical views may discourage students from pursuing scientific careers (Milford & Tippett, 2012). The purpose of this study was to assess the changes in elementary pre-service teachers' perceptions of a scientist's appearance and behavior following a 25-minute intervention. This targeted intervention was designed to challenge stereotypical depictions of scientists, as evaluated through the Draw-A-Scientist Test (DAST). Using the Wilcoxon signed-rank test for pretest and posttest scores and the McNemar test for each sub-category, the study sought to evaluate the impact of targeted interventions on promoting more inclusive and diverse views of scientists among pre-service teachers.

This study asked 33 elementary pre-service teachers (E-PST) to complete the Draw-A-Scientist Test (DAST; Chambers, 1993) before and after a 25-minute targeted intervention to promote more inclusive and diverse representations of scientists and their work.

The following overarching question evolved from the study's problem and purpose: What is the impact of a 25-minute targeted intervention promoting inclusive and diverse representations of scientists on E-PST's perceptions of a scientist's appearance and behavior, as measured by the Draw-A-Scientist Test (DAST)?

RQ1: Is there a statistically significant difference in E-PST 's perceptions of a scientist's appearance and behavior, as measured by the Draw-A-Scientist Test (DAST), before and after a 25-minute intervention?

H_0**1:** There is no statistically significant difference in the pretest and posttest DAST scores following the intervention.

$\mu_1 = \mu_2$

H_a**1:** There is a statistically significant difference in the pretest and posttest DAST scores following the intervention.

$\mu_1 \neq \mu_2$

RQ2: Is there a statistically significant difference between the proportion of stereotypical depictions of a scientist's appearance among E-PSTs?

H_0**2:** There is no statistically significant difference in the proportion of stereotypical depictions of a scientist's appearance following the intervention.

$\mu_1 = \mu_2$

H_a**2:** There is a statistically significant difference in the proportion of stereotypical depictions of a scientist's appearance following the intervention.

$\mu_1 \neq \mu_2$

RQ3: Is there a statistically significant difference between the proportion of depictions of a scientist's behavior among E-PSTs?

H_0**3:** There is no statistically significant difference in the proportion of depictions of a scientist's behavior following the intervention.

$\mu_1 = \mu_2$

H_a3: There is a statistically significant difference in the proportion of stereotypical depictions of a scientist's behavior following the intervention.

$\mu_1 \neq \mu_2$

Methodology

Participants

During the fall semester, thirty-five E-PSTs enrolled in a southeastern educator preparation program from a convenience sample were invited to participate in this study. In total, n = 33 elected to participate, where twenty-five were between the ages of 18-22, twenty-nine were female, one was non-binary, and twenty- eight were white (Table 1).

Table 1
Participant Descriptive Data

	N	Percentage		N	Percentage
Age			**Gender**		
18-22	25	75.8	Male	3	9.1
23-27	8	24.3	Female	29	87.9
			Non-Binary	1	3
Race			**Previous Science Courses**		
Black or African American	4	12.1	1-2	6	18.2
White	28	84.8	3-4	20	60.6
Non-Specified	1	3	5 or more	7	21.2

Note. N = 33

Study Design, Instrumentation, and Intervention

This study utilized a one-group pretest-posttest quasi-experimental design to examine the impact of a 25-minute targeted intervention on E-PSTs' perceptions of scientists. The participants were asked to complete the Draw-A-Scientist Test (DAST) both before and after the intervention. The intervention aimed to challenge and diminish stereotypical portrayals of scientists by promoting more diverse and inclusive representations. Each participant was given the DAST template (Appendix A) and instructed to close their eyes and draw an image of a scientist at work. These drawings were collected before the intervention.

During the intervention, E-PSTs were provided with 14 photos of both traditional and non-traditional scientists. These photos showcased a diverse range of scientists,

including famous traditional scientists such as Albert Einstein, Francesco Redi, Charles Darwin, and Werner Heisenberg, as well as the non-traditional scientists (Table 2).

Table 2

Non-Traditional Scientists and Contributions

Scientist/Individual	Field	Contribution
Hedy Lamarr	Actor, Model, Inventor	Co-invented frequency-hopping spread spectrum technology, a precursor to modern wireless communication (Wi-Fi, Bluetooth).
Ada Lovelace	Mathematician and Computing Pioneer	Developed the first algorithm intended for Charles Babbage's Analytical Engine, making her the first computer programmer. The first programming language was named "Ada" to honor her contributions.
Mary Anning	Paleontologist	Discovered the first complete Ichthyosaurus skeleton, significantly advancing the field of paleontology.
Dr. Temple Grandin	Animal Behaviorist, Inventor, and Autism Advocate	Revolutionized humane livestock handling systems and advocated for autism awareness and neurodiversity. Created the center track restrainer system and the curved loading chute.
Dr. Marie Maynard Daly	Biochemist	First African American woman in the USA to earn her PhD in chemistry (1947). Conducted research on cholesterol and heart disease, contributing to advancements in biochemistry and medicine
Prince	Musician and Inventor	Designed the keytar, blending electronic music technology with traditional live performance techniques. Created the "Minneapolis" sound by blending funk, R&B, electronic and rock music.
Steve McQueen	Actor and Inventor	Contributed to the development of the bucket seat, improving safety and ergonomics in high-performance vehicles
Julie Newmar	Actor, Model, and Inventor	Patented innovative clothing designs, including pantyhose with a specialized seam for better fit and comfort.
Zeppo Marx	Actor and Engineer	Part of a research team that received multiple patents, including one for a heart rate monitor, showcasing contributions to engineering and medical technology.
Dr. Sabrina Gonzalez Pasterski	Theoretical Physicist	A Cuban-American theoretical physicist studying black holes and spacetime. Advocate for women in STEM. The youngest human being to build an airplane, certify it airworthy, and conduct the first flight in that same aircraft.

Following the task of identifying these scientists and explaining their contributions, the researcher provided the names of each individual and elaborated on their scientific

achievements. The discussion centered on how these scientists broke barriers and challenged stereotypes, not only through their contributions to science and technology, but also by virtue of their diverse personal backgrounds. E-PSTs were also provided literature that can be utilized in elementary school classrooms to introduce young learners to these scientists (Table 3). The intervention concluded by addressing how stereotypes can dissuade certain demographics from pursuing careers in STEM fields. After the discussion, E-PSTS were again tasked with completing the DAST to assess whether the intervention influenced their perceptions of scientists.

Table 3.

Literature Associated with Non-Traditional Scientists

Scientist/Individual	Book Title	Approximate Reading Level
Hedy Lamarr	Hedy Lamarr's Double Life: Hollywood Legend and Brilliant Inventor	Grades 3-5
Ada Lovelace	Ada Lovelace, Poet of Science: The First Computer Programmer	Grades 3-5
	Ada Byron Lovelace and the Thinking Machine	Grades 4-6
Mary Anning	Dinosaur Lady: The Daring Discoveries of Mary Anning, the First Paleontologist	Grades 2-4
	Stone Girl, Bone Girl: The Story of Mary Anning	Grades 3-5
Dr. Temple Grandin	The Girl Who Thought in Pictures: The Story of Dr. Temple Grandin	Grades 2-5
Dr. Marie Maynard Daly	Marie, The Fantastic Biochemist	Grades Pre-K- 2
Prince	Prince (Volume 54) (Little People, BIG DREAMS)	Grades Pre-K-2
Steve McQueen	McQueen's Machines: The Cars and Bikes of a Hollywood Icon	Grades 5-8
Julie Newmar	The Conscious Catwoman Explains Life On Earth	Grades 5-8
Zeppo Marx	Zeppo: The Reluctant Marx Brother	Grades 5-8

The DAST checklist (Finson et al., 1995) assessed participants' drawings for stereotypical characteristics of scientists' appearance and behavior. Data were analyzed using the Wilcoxon signed-rank test to compare pretest and posttest scores, measuring overall changes in perceptions (Appendix B). The McNemar test was also applied to assess changes in specific sub-categories of stereotypical depictions. The statistical analyses were performed to evaluate the immediate impact of the intervention on

altering the perceptions of E-PST towards a more precise and comprehensive portrayal of scientists.

Data Analysis

The data collected from the DAST were analyzed to evaluate shifts in E-PSTs' drawings of scientists before and after the 25-minute intervention. A Wilcoxon signed-rank test was employed to compare pretest and posttest DAST scores, focusing on overall changes in stereotypical depictions. This non-parametric test was selected due to the ordinal nature of the data and the small sample size. A McNemar test was utilized to assess changes in the sub-categories of the DAST checklist (Finson et al., 1995) related to scientists' appearance and behavior. A significance level of $p<0.05$ was applied to determine whether the intervention resulted in statistically significant differences in E-PST s' DAST drawings (Chambers, 1983).

   Thirty-five participants were recruited to examine the impact of a targeted intervention aimed at addressing the perceived stereotypes of scientists in an elementary education program, as measured by the standardized DAST checklist (Finson et al., 1995). Of the 33 participants, the targeted intervention elicited a decrease in scientist stereotypes in 30 participants, whereas three participants did not change their perception of scientists.

   A Wilcoxon signed-rank test determined that there was a statistically significant decrease in their DAST post-intervention checklist score (Mdn =2) as compared to their DAST pre-intervention checklist score (Mdn = 7), z = -4.805, p < .001, as shown in Table 4. A point-biserial correlation was performed between the post-intervention and pre-intervention checklist scores. There was a significant negative correlation between the DAST post-intervention scores and the DAST pre-intervention scores, $r_{pb}(31)$ = -1.00, p < .001.

Table 4
DAST Pretest and Posttest

DAST	Mean (SD)	Median	Variance	Kurtosis	Skewness
Pre-Intervention	7.0303 (1.84)	7	3.405	3.164	-.905
Post-Intervention	2.6364 (1.69)	2	2.864	1.588	1.233

Note. N = 33

   As shown in Table 5, an exact McNemar's test was run to determine if there was a difference in DAST sub-category (Finson et al., 1995) drawings of scientific stereotypes, equipment/symbols, and actions/context following the targeted intervention. For the traditional scientific stereotypes, the results revealed statistically significant changes in

the drawings following the targeted intervention for eccentric (Δ =-14, p<.001), lab coat (Δ = -21, p <.001), glasses (Δ =-18, p < .001), messy hair (Δ =-10, p = .021), white male scientist (Δ = -7, p < .001), and working indoors (Δ = -9, p = .035).

Table 5

DAST Sub-Categories Results

Characteristic	Indicated in Pre-Intervention Drawing	Indicated in Post-Intervention Drawing	Difference	McNemar Change Test Sig.	Rank-Biserial Correlation
Scientific Stereotypes					
Eccentric	16	2	-14	<.001*	-1.00*
Lab Coat	26	5	-21	<.001*	-1.00*
Glasses	23	5	-18	<.001*	-1.00*
Facial Hair	3	0	-3	.250	
Messy Hair	24	14	-10	.021*	-0.62*
Male	19	11	-8	.077	
Older/Aged	8	2	-6	.109	
White Male Scientist	19	2	-17	<.001*	-1.00*
Working Indoors	30	21	-9	.035*	
Equipment and Symbols					
Scientific Instruments	26	10	-16	<.001*	-0.80*
Lab Environment	30	7	-23	<.001*	-1.00*
Books/References	11	4	-7	.118	
Scientific Symbols	14	8	-6	.210	
Actions/Context					
Investigating	28	14	-14	.003*	-.70*
Data Recording	17	8	-9	.022*	-.69*
Collaborating	3	6	+3	.508	
Working Alone	30	27	-3	.453	
Dangerous Activity	7	2	-5	.180	

Note. N = 33; *Significant at p <.05

For scientific equipment and symbols, the results revealed statistically significant changes in the drawings following the targeted intervention for scientific instruments (Δ = -16, p <.001) and lab environment (Δ =-23, p < .001). For scientific context and actions, the results revealed statistically significant changes in the drawings following the

targeted intervention for experimentation/investigation (Δ = -14, p = .003) and data recording (Δ = -9, p = .022). There were no statistically significant changes in the drawings for facial hair (Δ =-3), male (Δ =-8), older/aged (Δ = -6), books/references (Δ = -7), scientific symbols (Δ =-6), collaborating (Δ = 3), working alone (Δ = -3), and dangerous actions/activity (Δ = -5). As demonstrated by comparing Figure 1 to Figure 2, significant distinctions are observed between a scientist's conceptions before the intervention and those after the intervention.

Figure 1

Pre-Intervention Depiction of a Scientist
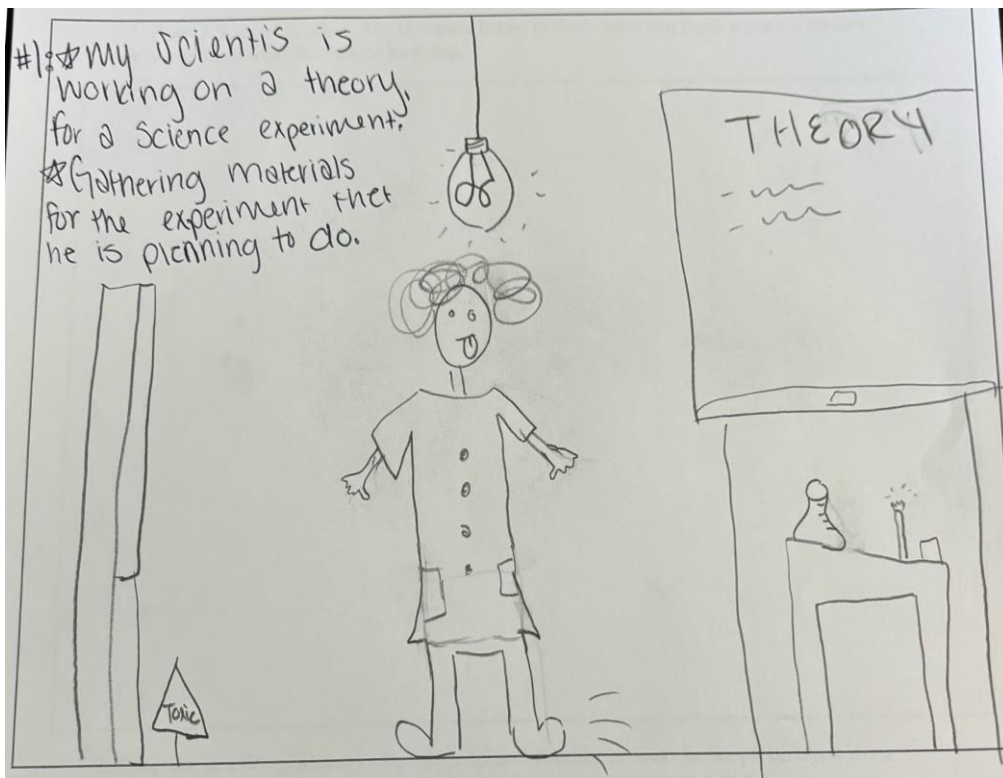
The following hypotheses were investigated for this quasi-experimental quantitative study: H_a1: There is a statistically significant difference in the pretest and posttest DAST scores following the intervention. H_a2: There is a statistically significant difference in the proportion of depictions of a scientist's appearance following the intervention. H_a3: There is a statistically significant difference in the proportion of depictions of a scientist's behavior following the intervention.

This study had several important limitations, including the sample size, scope of the study, and research design. The entire sample (N = 33) was drawn from professional education courses only at a US Southeastern public university, which restricts the generalizability of the findings to larger or more diverse populations. The study assessed only short-term effects, capturing immediate changes in participants' conceptions without examining long-term retention or sustained impact over time. The study relied on only one instrument (DAST) to measure E-PST perception among scientists. The

targeted intervention could have introduced response bias, as individuals could have adjusted their representations based on perceived expectations rather than genuine shifts in understanding. Finally, the absence of a control group limits the ability to isolate the effects of the intervention, as external factors influencing participant perceptions cannot be ruled out.

Figure 2

Post-Intervention Depiction of a Scientist
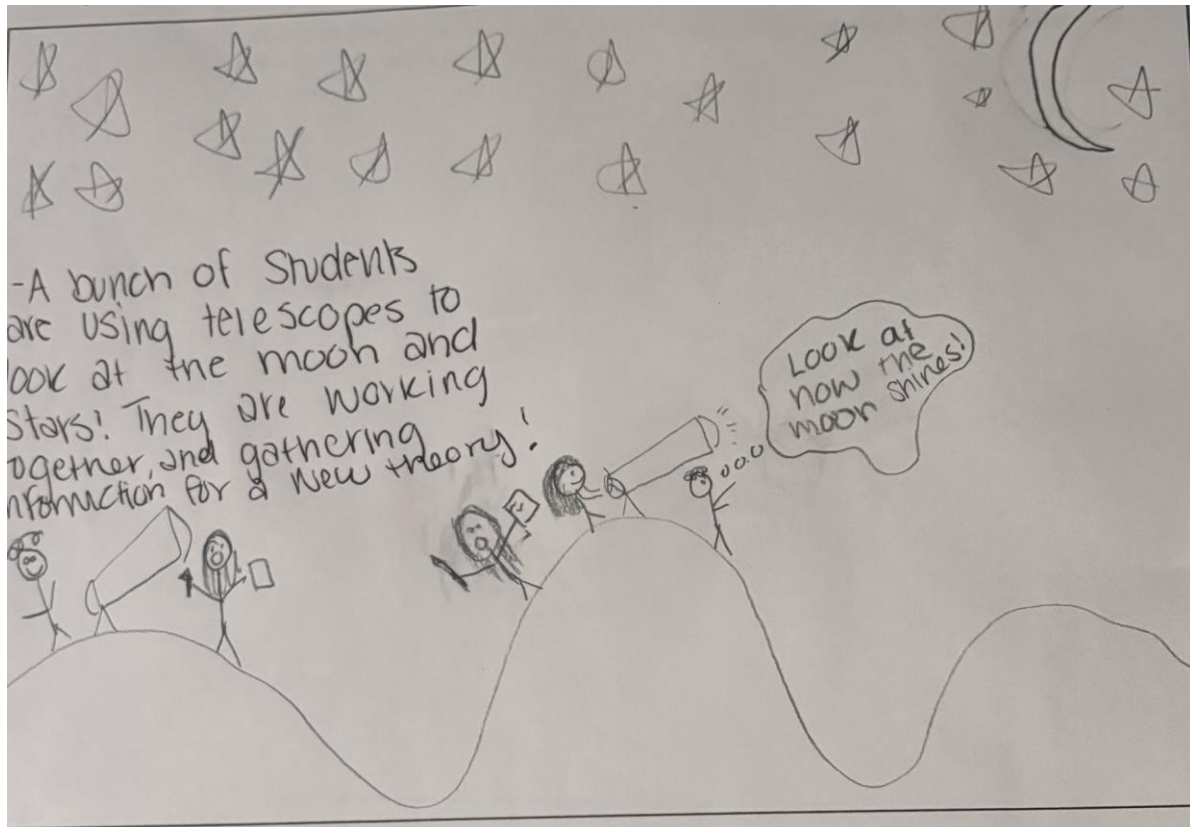
The data analysis revealed a statistically significant difference between the DAST pre-intervention drawing and the DAST post-intervention drawing. These results confirm previous research findings that E-PST have stereotypical conceptions of scientists (Yilmaz-Na & Sönmez, 2023), and targeted interventions can change these perceptions (Kinskey, 2023; Mbajorgu & Iloputaife, 2011).

A statistically significant change was observed in five of the nine stereotypical characteristics of scientists in the data analysis. These results indicate that further research is needed to determine if conceptual change (long and short-term) can be achieved with targeted intervention. Enrolling in more science courses that focus on non-stereotypical depictions may increase pre-service teachers' ability to teach science effectively without perpetuating further stereotyping (Avraamidou, 2013). Some research findings suggest that targeted instruction may not translate to meaningful learning (Mbajorgu & Iloputaife, 2011), while others suggest it is necessary to reduce

teachers' stereotypical scientist imagery (Kinskey, 2023; Mbajorgu & Iloputaife, 2011; Škugor et al., 2020).

The data analysis revealed statistically significant changes in four of the nine scientific behaviors. While the intervention significantly altered four stereotypical depictions, some behavioral categories—such as collaborating, books/references, scientific symbols, working alone, and dangerous activities—showed changes that were not statistically significant. The DAST is not a one-size-fits-all assessment of scientific perception and misconception (Brochey-Taylor & Taylor, 2024). The changes in scientific behaviors may be attributed to limitations in the DAST instrument itself, which might be unable to capture such variations. The brief duration of the intervention (25 minutes) may not have been sufficient for all E-PST participants to change their perceptions. Future studies should consider using different instruments to measure E-PST perceptions, implementing repeated interventions, and including a larger, more diverse geographic sample size to better understand trends.

These results confirm previous research results that E-PSTs hold common beliefs that scientists conduct experimental science using stereotypical equipment and have limited exposure to other scientific endeavors (Yilmaz-Na & Sönmez, 2023). A survey comparing data from 2012 to 2018 found that only 31% of elementary teachers self-reported a strong sense of readiness to teach science effectively (Smith, 2020). While elementary teachers exhibited a general knowledge of fifth-grade scientific content; they lacked complete proficiency in elementary science content to deviate from an inaccurate curriculum (Diamond et al., 2013). Follow-up studies are essential to determine whether the conceptual changes observed in this study are maintained over time. A longitudinal research approach, which includes four periodic assessments throughout the educational program (freshman, sophomore, junior, and senior years), can provide better insights into the long-term effects of targeted interventions. These extended sessions, along with continuous support, can not only reinforce but also sustain these changes over time.

Discussions and Conclusions

The findings of this study have important implications for both educational theory and practice, indicating that brief, targeted interventions can impact elementary pre-service teachers' (E-PSTs) stereotypical perceptions of scientists. The statistically significant difference in stereotypical depictions, as evidenced by the DAST checklist scores (Finson et al., 1995), suggests that even brief interventions can have a meaningful impact on pre-service teachers' naive conceptions. The results align with previous research indicating that targeted educational strategies can effectively challenge and change entrenched stereotypes (Mbajiorgu & Iloputaife, 2011; Škugor et al., 2020). Unlike other studies that showed statistically significant differences over an entire semester (Bilir et al., 2022; Crump, 2024), statistically significant changes in stereotypical imagery were observed in one targeted intervention.

In practice, this research provides a framework for integrating stereotype-challenging interventions smoothly into educator preparation programs. Changes in sub-categories of the DAST checklist (Finson et al., 1995), such as the reduction in depictions of scientists with lab coats, glasses, and messy hair, highlight the intervention's effectiveness in addressing some specific stereotypical traits. The lack of significant change in certain categories, such as facial hair and older scientists, suggests that these stereotypes may resist change and require more intensive or repeated interventions. The results also underscore the importance of diverse representations in science education. By exposing E-PSTs to diverse and non-traditional scientists from different backgrounds and fields, the intervention helped broaden their understanding of who can be a scientist. Having this intervention before being a teacher on record is crucial for fostering an inclusive educational environment where all students can see themselves as potential scientists.

Despite the positive outcomes, the study has limitations. The small sample size and short intervention duration may limit the generalizability of the findings. Future research should explore the long-term effects of such interventions and investigate whether repeated or extended interventions yield more substantial and lasting changes in perceptions. The findings of this study corroborate previous research, suggesting that stereotypical perceptions still persist among preservice teachers (Millford & Tippett, 2012; Yilmaz & Sönmez, 2023). Despite their inconsistencies, these stereotypical images of science and scientists mainly portrayed the scientist as a loner, different from the preservice themselves, who rarely shared their pursuits with others. The primary depiction portrayed in the study aligns with prior research, which indicates a preference for white males (Christidou, 2011) with messy hair (Karaçam, 2016). As shown in Table 1, 81.8% of the participants had completed at least three science courses before participation, indicating that teaching science content alone is insufficient. Educator preparation must shift science instruction to focus on the different scientific domains, the scientists who perform these endeavors, and different modalities that engage pre-service teachers (Milford & Tippett, 2012; Škugor et al., 2020).

Some research conclusions suggest that educator preparation programs may not have the capacity to significantly change pre-service teachers' perception of science and scientists (Bezzi, 1996; Diamond et al., 2013; Mbajiorga & Iloputaife, 2001). Other research indicates that pre-service teachers have less stereotypical views than in-service teachers (Uçar et al., 2020). The findings of this study present a contrasting perspective that underscores the time required for conceptual change. When societal reinforcement perpetuates incomplete and often stereotypical conceptions, E-PSTs construct mental representations based on this inadequate information, leading to the formation of misconceptions. These misconceptions can be further compounded by their interconnections, thus perpetuating a cycle of unlearning (Gooding & Metz, 2011).

Science methods instructors are responsible for addressing these inaccuracies and assisting preservice teachers in framing science as a collaborative endeavor that

transcends gender and ethnicity (Millford & Tippett, 2013). E-PSTs will need guidance, time, and space to navigate their learning cycles, and methods courses can facilitate conceptual change by promoting classroom discussions, self-assessment, and reflective thinking (Gooding & Metz, 2011) on the roles and behaviors of scientists. Teachers who possess more accurate conceptions of scientists and their behaviors are more likely to promote inclusivity in science education and instill in their students an enthusiasm for pursuing science in the future (Millford & Tippett, 2013). The key takeaway from this study is that brief, targeted interventions can lead to statistically significant changes in E-PST perceptions, highlighting their potential to address other stereotypical misconceptions.

Recommendations

Educator preparation programs should incorporate a wide range of diverse and non-stereotypical representations of scientists within their curricula. Doing so can help pre-service teachers cultivate a more inclusive understanding of the scientific profession, which they can subsequently share with their students (Škugor et al., 2020). Given the statistically significant differences observed from the 25-minute intervention (thirty participants showed a decrease in stereotypical imagery), similar interventions should be conducted regularly throughout educator preparation programs. As shown in Table 1, twenty-seven participants had taken three or more science courses, indicating a possible gap between content instruction and diverse images of scientists and their contributions. Continuous exposure to diverse representations of scientists may help reinforce and sustain positive changes in their perceptions.

Additional research is necessary to investigate the long-term effects of targeted interventions on pre-service teachers' perceptions of scientists. Longitudinal studies could provide valuable insights into how these perceptions change over time and the lasting impact of such interventions. Future interventions should specifically target the stereotypes found to be resistant to change in this study, such as those depicting older or male scientists. Tailored strategies may be essential for effectively challenging these more entrenched stereotypes. Encourage E-PST to engage in reflective practices that thoughtfully examine their perceptions and biases regarding scientists. This reflection can be facilitated through discussions, self-assessments, and journaling activities integrated into science methods courses.

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Appendix A

Close your eyes and image a scientist at work. In the space below, draw what you imagined.

1. Describe what the scientist is doing in the picture. Write at least two sentences.
2. List three words that come to mind when you think of this scientist:
   a. _____
   b. _____
   c. _____
3. What kind of things do you think this scientist does on a typical day? List at least three things:

Appendix B

Draw-a-Scientist Test (DAST) Checklist

1. Lab coat (usually but not necessarily white)
2. Eyeglasses
3. Facial hair (beard, mustache, abnormally long sideburns)
4. Symbols of research (scientific instruments, lab equipment of any kind)
Types of scientific instruments / equipment.
5. Symbols of knowledge (books, filing cabinets, clipboards, pens in pockets, and so on)
6. Technology (the "products" of science)
Types of technology (televisions, telephones, missiles, computers, and so on):
7. Relevant captions (formulae, taxonomic classification, the "eureka!" syndrome)
8. Male gender only
9. Caucasian only
10. Middle-aged or elderly scientist
11. Mythic stereotypes (Frankenstein creatures, Jekyll/Hyde figures, etc.)
12. Indications of secrecy (signs or warnings that read "Private," "Keep Out," "Do Not Enter," "Go Away," "Top
Secret," and so on)
13. Scientist working indoors
14. Indications of danger

Note: Several images of the same type in a single drawing count as one image (for example, two scientists eachwith eyeglasses receive only one check, not two).

A nexus of the relationships between learning approaches, epistemic beliefs and response to discordant supervisors' feedback among pre-service teachers

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Abstract

The study examined the correlation between pre-service teachers' epistemic beliefs, learning approaches and their response to discordant supervisors' feedback. The study is survey research that adopt a descriptive technique. Results found significant relationships between how pre-service teachers' respond to discordant feedback and each of the four epistemic beliefs type viz.: quick learning (r=0.22, p=0.002); omniscient authority (r=0.25, p=0.001), innate ability (r=0.28, p=0.000) and simple knowledge (r=0.32, p=0.000). No significant relationship was found between the pre-service teachers' response to discordant feedback and certain knowledge (r= -0.011 and p=0.88). The study also found that when the surface approach to learning was controlled, there was significant correlation between teachers' response to discordant feedback and deep approach to learning (r=0.39, p=0.000); while there was no significant relationship between their response to discordant feedback and surface approach (r=0.041, p=0.578) when deep approach was controlled. The study concluded on the need for the incorporation of deep approaches into teacher education programmes including reflective teaching practices and how to give and respond to feedback by supervisors and pre-service teachers respectively. The approaches should also consider the contexts of epistemic beliefs of the pre-service teachers.

Keywords: cognitive dissonance, epistemic beliefs, feedback, learning approaches, teacher education.

Introduction

Teaching practice is to teacher education what internship/industrial training is to students of administration, management and technology and what clinical posting and attachment is to medical/health sciences students. Teaching practice is usually a supervised activity of two blocks of six weeks period for teacher trainees in teacher education programmes in the university and one block of three months for teacher

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trainees in the Nigeria Certificate in Education (NCE) programmes or in education degree programmes in degree awarding Colleges of Education. Its principal aim is to enable pre-service teachers acquire pragmatic hands-on-training on how teach. Yet, the merits of teaching practice to teacher trainees and to teacher education are grossly undermined by the lack of adequate feedback which could be obtained by spontaneous and subtle evaluations of the components, processes, products and outcomes of such teaching practice programmes. Such evaluation would not only reveal challenges in the planning, organizing, staffing, directing, coordinating and budgeting of the teaching practice but also challenges encountered by teacher trainees in reconciling, reducing or eliminating conflicting cognition between the theories and practice of teaching. Observations from teacher trainees from the teaching practice field reveal that one of the challenges encountered is that of cognitive dissonance enabled by incongruence in the feedback provided by supervisors to pre-service teachers during teaching practice. The few formal research conducted on cognitive dissonance experienced by teacher trainees in the Global South necessitates this study as the nature of the incongruence and resulting cognitive dissonance and how these teachers-in-training-respond to them need be studied and reported. The incongruent feedback that initiated the cognitive dissonance as conceptualised in this study is not and should never be equated to negative feedback even though incongruent feedback is also expected to trigger actions targeted towards resolution. Incongruent feedback thus refer to supervisor-returned verbal or written remarks concerning the teaching skills, competences, behaviour and attitude of pre-service teachers that are different from previously and widely held pre-service teacher assumptions of these teaching outcomes.

Cognitive dissonance is a term that emerged from the 1950s and is credited to the Leon Festinger. Rex and Rangaiah (2017) explains that it is the mental stress that individuals   experience when presented with two or more inconsistent opinions, contents, ideas, or values at the same time. It could also arise when people are faced with a new information that disagrees with their prior held views (Rex & Rangaiah, 2017). Some of the highlights of Festinger's theory according to Harmon-Jones (2012) included that: people are driven to reconcile contradictory beliefs; the degree of dissonance experienced depends on the significance of the contradictory and consistent beliefs; the degree of dissonance experiences in subjects is a function of initial beliefs and indicates a greater degree of attitude change for those who experience the most dissonance.

Teachers-in-training are most likely to enter into the teaching profession with certain beliefs about teaching which they may either be conscious or unconscious of. These entry beliefs emanate from their experiences as students; significant social relations and connections with professors, mentors and classmates and their thoughtful considerations upon critical incidents in their initial encounters with teaching (Jaimes, 2013). These beliefs are capable of making pre-service teachers experience cognitive dissonance as some of their prior held conceptions about learners and how to teach conflict with what they experience in the field (Eisenhardt, Besnoy & Steele, 2012). There

are many instances which could cause cognitive dissonances in trainees. For instance, a cognitive dissonance may be created when a trainee having been taught about the importance of motivation and reinforcement in classroom interactions is told by the supervisor to use a technique of motivation such as clapping sparingly most especially with adolescent learners. An elusive source of cognitive dissonance could be trainees having been taught to use (for the sake of time bound nature of objectives) "At the end of the lesson" in methodology classes were informed by the supervisor of his/her preference for "By the end of the lesson". A rather confusing dissonance may be created where a supervisor having supervised the teaching sessions of a trainee and inspected the lesson plan gave the feedback that "You need to improve on the lesson content of your lesson plan". No tangible feedback was provided when the trainee probed further by asking the supervisor "How can I improve on the lesson content of my lesson plan?"

Feedback literacy in teacher education

Feedback literacy has gain some ascendancy in the training and education of teachers in recent times (Putri & Yumarnamto, 2024, Abderahhim, 2022, de Kleijn, 2021, Istencioglu, 2022, The University of Melbourne, n.d.). This is not unconnected to the identification of feedback as one of the most significant factors that influence students' learning and the responsibilities of teachers in the feedback process (Putri & Yumarnamto, 2024, Zhan, 2022). The term 'teacher feedback literacy' captures the exigencies of feedback literacy in the array of skills required of teachers. It refers to the knowledge, expertise and dispositions that are required to design effective feedback processes in ways that enable student uptake of feedback (Carless & Winston, 2020). There is a progression from what it means and how it could be supported through design to what students can do with the feedback information they receive (de Kleijn, 2021). Also, a survey of literature on teacher feedback literacy suggests the recognition of contexts including the level of education being taught in the required feedback literacy skills of teachers. Hence, the level of teacher feedback literacy skills required of higher education teachers would be different from that expected of teachers in high schools. Even within higher education, responsibilities could be anticipated to differentiate the feedback literacy expected of teachers (Boud & Dawson, 2023). Carless and Winston (2020) have also identified discipline based teacher feedback literacy. Teacher educators play important (facilitating) roles in ensuring that pre-service teachers develop feedback literacy through curriculum design, guidance and coaching (Carless & Boud, 2018, Carless, 2020). In fact, aspersions are cast on teacher educators when pre-service teachers do not develop competences in feedback literacy despite policy statements and reforms that support the feedback mechanism (Lam, 2019).

Supervisors are therefore expected to model feedback literacy to pre-service teachers during teaching practice in ways that promote the development of transformative teaching and other life skills through a dialogic communication process, within a safe and growth-oriented ambience that also engenders the high possibility of

pre-service teachers' use of such feedback process with their students in the future. In the process of such modelling, feedback from supervisors that are incongruent with the prior learning of pre-service teachers should have been resolved. Yet, this is observed to be far from being the norm with pre-service teachers seeking alternative sources for dissonant feedback resolution. The result of this oversight during the teaching practice supervision process could lead to the emergence of cognitive dissonance which might not have occurred in the wake of partnership approaches to feedback by supervsors and supervisees (Carless, Robert & Winstone, 2020).

Cognitive dissonances albeit referring to a negative state of non-alignment of what-ought-to-be with what-is, have been observed not to in themselves be inimical to the development of individuals. In fact, their existence has spurred the development of cognitive dissonance instructional strategies which has been used in diverse disciplines (McFalls & Cobb-Roberts, 2001; Gorski, 2009; Kivirinta, 2014; Corradi, Clarebout & Elen, 2015; Widarti, Permanasari, Mulyani, Rokhim & Habbidin, 2021). The challenge of cognitive dissonance for trainee teachers would be how to reduce or eliminate them with little or no support from supervisors who are supposedly the more knowledgeable others in the teaching practice process and as such expected to provide scaffolds which will aid the immediate reduction/elimination of the dissonance. Notwithstanding this situation, trainee teachers have been reported to evolve strategies for dealing with cognitive dissonances created by supervisors' feedback. These strategies include: "Work with Supervisor; Work with Others (with students, work with significant others who are at the same or higher level than the supervisor, work with supervisor in company with other students); Work with Self (interfacing with authors of pedagogy texts) and; Least resistance path (immediate acceptance without further clarifications)" (Oyetoro, Adeleke & Omoteso, 2019). Several other studies have focused on factors that may affect the development and reduction of cognitive dissonances and the use of cognitive dissonance reduction strategies by individuals in diverse contexts

Cultural and contextual factors that shape epistemic cognition

Epistemic cognition, which refers to individuals' beliefs about the nature of knowledge and knowing, is a dynamic construct shaped by a complex interplay of influences. How we come to know is not wholly a function of our biological makeup but a combination of both biological and ecological factors. Our knowledge of how we come to learn and understand the nature of knowledge itself is determined by cultural and contextual factors. Understanding these influences is essential for appreciating how people come to acquire, justify, and evaluate knowledge, particularly in diverse and pluralistic societies. Rami (2023) highlighted that "knowledge about the mind and human nature, or as human nature, is hopelessly bound to its uses within the matrix of ideological and epistemological needs of the locale in which it is practiced". Rami added that the epistemic setting in which Psychology, as a discipline for instance, "takes place will shape

what is worth observing, how it is to be studied, how the day is to be interpreted and the nature of the ultimate explanatory units".

Contextual factors encompass the immediate educational, political, technological, and socio-economic environments that surround individuals and influence their epistemic development. One of the most influential contextual determinants is the educational system, including curriculum structure, assessment practices, and pedagogical approaches. For instance, educational settings that emphasize inquiry-based learning and critical discourse tend to foster more sophisticated epistemic beliefs, while rote learning environments often reinforce absolutist or simplistic conceptions of knowledge (Barzilai & Weinstock, 2015; Muis et al., 2016).

Disciplinary contexts also shape epistemic cognition, as different academic domains promote distinct epistemological norms. For example, knowledge in the sciences is often presented as evolving and tentative, whereas in disciplines like mathematics, knowledge is frequently framed as certain and authoritative (Hofer, 2000). Furthermore, technological and media environments play an increasingly significant role in shaping epistemic cognition. Access to the internet and digital platforms provides individuals with exposure to diverse knowledge claims but also increases the risk of epistemic fragmentation through echo chambers and misinformation (Chinn et al., 2014; Barzilai & Chinn, 2018). Critical digital literacy thus becomes essential in navigating contemporary knowledge landscapes.

Political and ideological contexts can either encourage or constrain epistemic development. Societies that promote open discourse, democratic participation, and academic freedom tend to facilitate critical evaluation of knowledge, whereas authoritarian regimes or ideologically rigid environments may discourage questioning and foster dogmatic epistemic orientations (Greene et al., 2016).

Finally, socio-economic factors such as access to quality education and resources significantly influence epistemic cognition. Individuals from marginalized or resource-constrained backgrounds may have limited opportunities for exposure to diverse knowledge sources and critical engagement with epistemic issues (Greene et al., 2016).

In contrast to contextual factors, cultural factors refer to the broader, historically embedded belief systems, social norms, and traditions that frame individuals' understanding of knowledge. Culture provides the interpretive lens through which individuals make sense of what knowledge is, who holds epistemic authority, and how knowledge is constructed or transmitted.

One prominent cultural influence is the degree of respect for authority and hierarchy within a society. In cultures that place high value on deference to elders, religious leaders, or institutional authorities, individuals may develop epistemic beliefs that prioritize knowledge from established sources over independent inquiry (Bendixen & Rule, 2004). Conversely, cultures that emphasize critical questioning and individual autonomy may promote more evaluativist or constructivist epistemic orientations (Hofer, 2008).

Collectivist versus individualist cultural orientations also shape epistemic cognition. Collectivist societies, which emphasize social harmony and group consensus, may foster epistemic beliefs that prioritize shared knowledge and discourage dissent. In contrast, individualist cultures may encourage personal inquiry, skepticism, and tolerance for epistemic uncertainty (Chan, et al., 2011).

Moreover, religious and traditional epistemologies significantly influence how knowledge is conceptualized. In many societies, religious beliefs provide foundational epistemic frameworks, with knowledge often viewed as divinely ordained or revealed, shaping attitudes towards alternative knowledge claims (Elby & Hammer, 2001; Chan, 2004). Similarly, in contexts where indigenous knowledge systems are prominent, knowledge may be viewed as relational, experiential, and deeply embedded in communal practices (Aikenhead & Michell, 2011).

Finally, globalization and cross-cultural encounters have introduced increasing epistemic pluralism, exposing individuals to competing knowledge systems. While this can foster epistemic flexibility and tolerance, it may also generate epistemic conflict and uncertainty (Barzilai & Chinn, 2018). Recognizing the interplay of these factors is essential for researchers and educators seeking to promote epistemic development, particularly in culturally diverse and politically complex environments.

Several studies have reported the dynamics of factors that influence (cognitive) dissonance. Rex and Rangaiah (2017) assessed sex differentials in eight different areas assessed by a dissonance questionnaire. The study reported that in the domains of personal adjustment, health, and wellness, specifically, females exhibited greater dissonance than males did in the domains of schooling and learning, subservience/dominance divisions, and external and impersonal domains. Ma (2017) however reported that there is no difference between women and men with respect to their methods of minimizing cognitive dissonance in relation to a partner's physical appearance. Drawing upon the notion of cognitive dissonance, Jermias (2001) postulated that individuals who are devoted to a specific path of action may lose sight of the advantages of the alternative that was abandoned. Lavergne and Pelletier (2015) established that autonomous motivation towards the environment was related with behaviour modification use and the avoidance of cognitive restructuring strategies both for dissonance reduction and compensation for counter-environmental actions. Controlled motivation towards the environment was related to the use of behaviour modification strategies for dissonance reduction however using cognitive restructuring techniques to reduce inconsistencies that are not dangerous. Yet few of these studies have studied cognitive dissonances among teachers-in-training during teaching practice sessions/periods, the strategies they use in reducing same when it arises and psychosocial factors that may affect these. Pre-service teachers face cognitive dissonance between their beliefs and their field experiences, according to Eisenhardt, Besnoy, and Steele (2012). This led to justified true beliefs on the relation between student knowledge

and effective teaching, held assumptions about students who were different from them, and the meanings these hold for teaching in the future.

While research on cognitive dissonances and use of strategies to reduce or eliminate them are ongoing, it is informative to study the relations that psychological constructs such as epistemic beliefs and learning approaches, which address the idiosyncrasies of individuals, may have with response to discordant supervisor feedback among would-be teachers. This becomes necessary when viewed from the backdrop that there are spirited attempts to curb the perennial problems of: dearth of clinical supervision for teacher trainees by supervisors and cooperating teachers; lack of positive disposition towards teaching as a profession by trainees even after teaching practice sessions and; the paucity of extrinsic motivation for prospective entrants into the teaching profession.

Gruber and Stamouli (2009) defined epistemic beliefs as notions of the characteristics of knowledge and how knowledge is acquired held by an individual. It refers to a person's beliefs about the nature of human knowledge such as its certainty and its conceptualization together with a person's beliefs about the criteria for and the process of knowing (Kienhues, 2013). A growing interest in personal epistemic beliefs has been observed in the area of educational research (Kienhues, 2013; Berding, Roff-Wittlake & Buschenlange, 2017). Hofer and Pintriich (1997) explained that one of the reasons for such interest in personal epistemology may be explained by the increasing evidence reporting the central role of epistemological beliefs in cognitive and meta-cognitive learning processes including the facilitation of educational reforms. A significant growth in studies that examined epistemic beliefs among teachers-in-training has been observed. Chai, Khine, and Teo (2006) surveyed 537 teachers-in-training in Singapore and found that, while they seemed to lean towards believing that knowledge is uncertain, pre-service teachers also tended to believe in experts. Pre-service teachers also emphasised learning effort. The study concluded that, based on the pre-service teachers' characteristics, Singaporean teacher educators might need to help them develop mature epistemic perspectives. The epistemic views of Korean pre-service teachers were studied by So, Lee, Roh, and Lee (2010). The study reported that only innate ability, certain knowledge, and quick learning were found to be reliable indicators of their epistemic views. Epistemological beliefs was also found by Jamshidi, Mahmoodi, Shiklar and Imanzadeh (2025) to have a significant positive relationship with teachers' professional competence.

A more recent study which employed the qualitative approach by Yildirir and Cirkinoglu Sekercioglu (2018) revealed three main belief dimensions. The first dimension indicated that the teacher education candidates are able to relate learning with effort, and they were reported to thought that innate ability would improve through effort. The majority of candidates believed that knowledge construction is a slow and relative process, according to the second dimension. The third dimension revealed that the majority of candidates held one of three distinct perspectives: knowledge changes absolutely, changes depending on the field, or does not change at all. Highlights of the

results also include the candidates' assertion that words have multiple meanings, that people interpret words according to their experiences, and that there is not a single correct solution to scientific problems because knowledge evolves over time and scientists suggest different approaches. The findings of these studies suggest that the epistemological beliefs held by pre-service teachers are not constant but may be expected to differ across culture and even change based on milieu. This present study may thus be seen as been necessary so as to establish what epistemological beliefs are associated with the use of dissonance reduction strategies use among teacher education candidates, most especially when such cognitive dissonance emanate from supervisors. Establishing the relationship among these variables may thus help to initiate appropriate intervention strategies that could make teacher education candidates use appropriate dissonance reduction strategies.

Cognitive dissonance and affective responses to evaluative feedback

Cognitive dissonance that emanates from evaluative feedback is often accompanied by a range of emotions, which are not merely incidental but integral to how individuals process and respond to such feedback. Harnessing these emotions as educative resources could constitute a positive and productive approach that fosters complex professional learning (Ince, 2012; Festinger, 1957; Pitt & Norton, 2016; Inge & Aino, 2012, Stark & Koslouski, 2022; Yoo & Carter, 2017). It could thus be reasonably expected and hypothesized that incongruent evaluative feedback from supervisors has the potential to elicit either positive or negative affective responses among supervised pre-service teachers. These affective responses, whether constructive or detrimental, significantly mediate the experience of cognitive dissonance and shape how it is navigated (Pitt & Norton, 2016; Boud & Molloy, 2013). In fact, the intensity of emotions experienced by learners during a learning activity according to Plass and Kalyuga (2019) could increase the cognitive load needed to process those emotions which could detract their ability to attend to and process the learning content.

The type and intensity of affective responses triggered by incongruent feedback are likely to influence both the magnitude of cognitive dissonance experienced and the likelihood of its resolution. For instance, a heightened negative affect may entrench defensiveness and hinder reflective learning, while a moderated, critically curious affect may promote engagement with the dissonance in ways that lead to cognitive and professional growth (Boud & Molloy, 2013; Pekrun, 2006). This conjecture assumes that although cognitive dissonance may be triggered by incongruent or even unexpected feedback from supervisors, the process of its resolution is neither automatic nor solely cognitive. Rather, it is deeply intertwined with pre-service teachers' affective orientations toward feedback and, crucially, supervisors' expertise in recognising, managing, and productively channelling the emotional responses elicited (Carless & Boud, 2018).

In this regard, Ince's (2012) findings are particularly instructive, highlighting the complex relationship between facilitators' ability to recognise and manage cognitive dissonance and factors such as their experience in the supervisory role, observational acuity, and personal commitment to critical reflection. These findings align with broader literature emphasising the emotional dimensions of feedback and their role in shaping professional identity development and transformative learning (Brookfield, 2017; Yang & Carless, 2013). Thus, far from being viewed as mere by-products, the affective responses accompanying cognitive dissonance are central to understanding and improving the feedback process within teacher education contexts.

Learning approaches are thought of as a component of the larger system that surrounds an educational event (Biggs, Kember & Leung, 2001). Learning approaches are generally seen as cognitive strategies. However, the emotions triggered by evaluative feedback can push pre-service teachers to adopt a particular learning approach as a means of resolving or coping with dissonance. Two approaches of deep approach and surface approach were identified by Biggs and associates. Approaches to learning are part of presage factors and determine learning outcomes. The use of a particular learning approach may be associated with the utilization of dissonant feedback reduction strategies more so since reduction in cognitive dissonance is a goal and a learning outcome for pre-service teachers during their field experience. The availability of studies that seek to examine the relationship between approaches to learning and the use of dissonance in supervisors' feedback is doubtful thus establishing the imperatives for this study.

Suffice it to state that the researcher in conjunction with other researchers, Oyetoro, Adesina and Eyebiokin (2020) had earlier published a title with similar variables using the discriminant function analysis. The findings of the study revealed a function with positive coefficients for deep approach, simple knowledge, surface approach, omniscient authority and certain knowledge while innate ability and quick learning had negative coefficients. The revealed function was also reported to be maximised for 77% of pre-service teachers with high dissonance reduction strategy use and; 36.7% and 67.6% of pre-service teachers with moderate and low dissonance reduction strategy use respectively. Empirical evidence about response pattern to cognitive dissonance and its relationship with predictive factors such as epistemic beliefs and learning approaches is needed so as to guide pragmatic efforts at tackling its relative lasting effect on pre-service teachers. Such empirical evidence would benefit different stakeholders in (teacher) education in different ways. For instance, supervisors would be provided with empirical information on the pattern of response pre-service teachers use to respond to discordant feedback and would be encouraged to utilize collaborative and reflective approaches with the pre-service teachers. Teacher educators could use the findings from the study to modify their micro-teaching practice sessions, teaching methods classes and orientation programmes. It could also aid them to do an overhaul of the teacher education programme to include incorporation of strategies that would align with the pre-service

teachers' personal epistemic beliefs and learning approaches. The pre-service teachers could be motivated to (dis)engage their distinct epistemic beliefs and learning approaches in responding to the discrepancies in held cognition arising from incongruent supervisor feedback during teaching practice.

The overall aim of the study was to establish the relationship between epistemic beliefs, learning approaches and the use of strategies to reduce cognitive dissonance arising from dissonant supervisors' feedback among pre-service teachers in Obafemi Awolowo University, Southwestern Nigeria.

Research Objectives

This study specifically:

1. established the relationship between each of the five epistemological beliefs and the response pattern of pre-service teachers to discordant supervisor feedback; and

2. examined the relationship between each of the learning approaches (when the other one is controlled for) and the response pattern of pre-service teachers to discordant supervisor feedback.

Research Hypotheses

The following two research hypotheses were therefore raised for this study:

1. There will be no significant relationship between each of the epistemological beliefs (quick learning, omniscient authority, innate ability, simple knowledge and certain knowledge) and the response pattern of pre-service teachers to discordant supervisor feedback and;

2. There will be no significant relationship between each of the learning approaches (deep and surface approach) and the response pattern of pre-service teachers to discordant supervisor feedback.

Methods

Design

The study is a survey research that adopted the descriptive approach.

Population

The population consisted of 902 pre-service teachers who received lectures and sat for examinations in an intermediate teaching methodology course (ASE 202: Curriculum and Instruction) at the Obafemi Awolowo University during 2014/2015 and 2015/2016 Academic Sessions. These candidates also observed the 2016/2017 teaching practice exercise.

Sample and sample technique

The sample for the study consists of 200 pre-service teachers in their penultimate and final years of their teacher education programme selected using simple random sampling technique. One hundred and ninety two (192) of the selected sample representing a 96% Response Rate (RR) which is adequate enough for the generalisation of the findings of this study. Eighty-five males (85) and 107 females make up the sample profile. Of the students, 99 were in their penultimate class (third year), and ninety-three were in their final class (fourth year). The departments representing the students' backgrounds are Arts and Social Science (143), Science and Technology (33), and Kinesiology, Health Education & Recreation (16). The mean of the age of the respondents is 22.73 years old with a 3.32 standard deviation.

Instrumentation

The three instruments that were used to collect the data used for the study were: "*Epistemological Beliefs Inventory (EBI), the Revised Study Process Questionnaire (R-SPQ-2F),* and *Dissonance in Supervisors' Feedback Reduction Strategies Use Questionnaire (DSFR-Q)".*

Epistemological Beliefs Inventory (EBI)

The Epistemological Belief Inventory developed by Schraw, Bendixen and Dunkle (2002) was used for the study. The EBI is five factors 28-item 5 point Likert scale questionnaire. The five factors as proposed by Schommer (1990) are Simple Knowledge (7 items), Certain Knowledge (5 items), Omniscient Authority (5 items), Innate Ability (6 items), and Quick Learning (5 items). Pre-service teachers responded to the items with a 1 corresponding to "Strongly disagree" and 5 corresponding to "Strongly Agree". Items 2, 6, 19, 24 and 28 were reversely scored. Cronbach Alpha values for the items in this inventory have reportedly ranged from 0.58 to 0.68. To assess the predictive validity of the EBI, Schraw et al. (2002) compared the total epistemological belief score with a reading comprehension test. Cronbach Alpha value obtained for the present study was 0.83.

Dissonance in Supervisors' Feedback Reduction Strategies Use Questionnaire (DSFR-Q)

"Dissonance in Supervisors' Feedback Reduction Strategies Use Questionnaire" (DSFR-Q) which was developed by Oyetoro, Adeleke and Omoteso (2019) comprised 14 items on the mutually exclusive courses of action trainee teachers may take when they are given feedback that are in not in consonance with what they have learnt in teaching methodology classes. The response scale was a 6-point Likert scale, which ranges from 0 (Not likely) to 5 (Most likely). Sample items from the questionnaire include: "*try to see how different facts and ideas fit together*" and "*discuss the area of conflict with an expert in the field of teacher education*". For the current investigation, 0.85 Cronbach alpha value which was thought to be suitable for this study was established.

The Revised Two Factor Study Process Questionnaire (R-SPQ-2F)

Biggs, Kember & Leung (2001) created this questionnaire to help teachers assess both their own methods of teaching and their students' learning approaches. Only surface and deep approaches are evaluated by the instrument. It contained five items for each of the surface and deep motive and strategy scales, with ten items for each approach. The unidimensionality of the items for each of the four subscales has been established. Cronbach Alpha values of 0.64 and 0.73 were established for surface and deep approach respectively by the Biggs *et al*. Cronbach Alpha values of 0.86 and 0.76 were established for surface and deep approaches respectively for the present study.

Procedure for collecting data

The targeted population were approached at their assigned schools for the teaching practice exercise. They were given an explanation of the study's goal before being given the questionnaire. The completed surveys were promptly gathered.

Method of analysing data

Bivariate correlation statistics was used to analyse data gathered from the respondents.

Results

Research Hypothesis One: There will be no significant relationship between each of the epistemic beliefs (quick learning, omniscient authority, innate ability, simple knowledge and certain knowledge) and the response pattern of pre-service teachers to discordant supervisor feedback.

In order to determine if there is significant relationship between each of the teachers-in-training personal epistemic beliefs and their pattern of response to discordant supervisor feedback, the correlation of the their scores on the sub-scales of the epistemic beliefs scale with the response pattern to discordant supervisor feedback instrument was obtained. The results are displayed in Table 1.

Table 1
Bivariate correlational analysis of epistemic beliefs and response pattern of pre-service teachers to discordant supervisor feedback

		Quick Learning	Certain Knowledge	Omniscient Authority	Innate Ability	Simple knowledge
DSFR-Q	R	0.22	-0.011	0.25	0.28	0.32
	Sig. (2-tailed)	0.002	0.88	0.001	0.000	0.000
	R^2	0.049	0.00012	0.06	0.08	0.099
	Ranking	4	5	3	2	1

The results in Table 1 depicts that quick learning has a positive low correlation index of 0.22 (p=0.002) with response pattern of pre-service teachers to discordant supervisor feedback. The correlation index of omniscient authority with the use of the strategies is 0.25 (p=0.001). Innate ability has a positive low correlation index of 0.28 (p=0.000) while simple knowledge has a moderate positive correlation index of 0.32 (p=0.000).

Summarily, the reported correlation indices for four epistemic beliefs, namely quick learning, omniscient authority, innate ability and simple knowledge, with the pre-service teachers' use of strategies to reduce cognitive dissonance effect arising from supervisors' dissonant feedback are significant at 0.05 significance level. The results however show that only certain knowledge has a very low negative correlation index of -0.011 which is not significant at 0.05 significance level (p= 0.88). Further analysis using coefficient of determination (calculated by obtaining the square of the correlation coefficient) depict that simple knowledge account for 9.9% variance in the response pattern of pre-service teachers to discordant supervisor feedback; innate ability account for 8% variance; omniscient authority account for 6% variance while quick learning account for 4.9% variance. Certain knowledge account for a negligible variance of 0.012% in the response pattern.

Research Hypothesis Two: There will be no significant relationship between each of the learning approaches (deep and surface approach) and the response pattern of pre-service teachers to discordant supervisor feedback.

The choice of accept or reject decision for this null hypothesis was determined by taking the correlations between each of the learning approaches and the response pattern of pre-service teachers to discordant supervisor feedback when either of the strategies was controlled for were obtained. The results are as shown in Table 2.

Table 2

Partial correlational analysis of learning approaches with response pattern of pre-service teachers to discordant supervisor feedback

Correlations					
Control Variables			DSFR-Q	Deep Approach	Surface Approach
-none-[a]	DSFR-Q	r	1.000	.46	.26
		p (2-tailed)	.	.000	.000
		df	0	190	190
	Deep Approach	r	.46	1.000	.49
		p (2-tailed)	.000	.	.000
		df	190	0	190
	Surface Approach	r	.26	.49	1.000
		p (2-tailed)	.000	.000	.
		df	190	190	0
Surface Approach	DSFR-Q	r	1.000	.39	
		p (2-tailed)	.	.000	
		df	0	189	
	Deep Approach	r	.39	1.000	
		p (2-tailed)	.000	.	
		df	189	0	
Deep Approach	DSFR-Q	r	1.000		.041
		p (2-tailed)	.		.58
		df	0		189
	Surface Approach	r	.041		1.000
		p (2-tailed)	.58		.
		df	189		0

Table 2 revealed that when surface approach was controlled for, the correlation between deep approach and the response pattern of pre-service teachers to discordant supervisor feedback is moderate and positive and is significant at the 0.05 significance level (r= 0.39, *p*= 0.000). On the other hand, when the deep approach was controlled for, the correlation between surface approach and the response pattern of pre-service teachers to discordant supervisor feedback is very low though positive and is not significant at 0.05 significance level (r= 0.041, *p*= 0.58).

Discussion of findings

The finding of this study has established that four of the epistemic beliefs are related to the response pattern of pre-service teachers to discordant supervisor feedback. The remaining dimension that is not related to their response pattern is Certain Knowledge. The order of the correlation is Simple Knowledge, Innate Ability, Omniscient Authority, Quick Learning and Certain Knowledge. Those who believe in Simple Knowledge believe in the structure of knowledge, the very presence of dissonance could be explained to make them want to seek stability of the tensed cognitive structure almost immediately, hence the high correlation. Innate Ability belief with believe in the stability of knowledge has the second highest coefficient of determination. The low but positive correlation obtained could be explained on the basis that since reduction of dissonance is a goal which will help teacher trainees maximize the opportunities proffered by the teaching practice experience, those with this belief seek to maintain the stability in their knowledge through the use of the strategies. The other important beliefs are omniscient authority which emphasizes the source of knowledge and quick learning which emphasizes the speed in learning. The order of the relationship could be said to depict the importance of each of the personal epistemic beliefs in the provision of interpretive framework that could guide pre-service teachers' practice during the teaching practice period.

The inverse relationship between Certain knowledge and the response pattern to dissonance in supervisor feedback is reasonably expected. The assumptions of this nature of knowledge include that knowledge is absolute and does not change, truth is black and white, knowledge is acquired as established facts and not actively constructed, experts possess ultimate truth and, doubt or questioning is unnecessary (ChatGPT, 2025). Therefore adherents of certain knowledge are most likely not to engage in any knowledge construction process that would enable them query the incongruent supervisor feedback. The findings of this study has once again reiterated the fluidity of pre-service teachers' epistemic beliefs as alluded to by Yildirir and Cirkinoglu Sekercioglu (2018) and the need to further study it. Also, the contextual undertone of the relationship between epistemic beliefs of the pre-service teachers' and their responses to dissonant supervisor feedback could be brought to explain the present findings. For instance, it is both disciplinary (Hofer, 2000) and indigenous (Aikenhead & Michell, 2011) epistemologies that teachers and teacher educators cum supervisors as adults and professionals are to be accorded

respect such that a query of their feedback by students and pre-service teachers could be deduced as being disrespectful and antisocial.

The findings from this study indicated that when surface approach was controlled for, a significant moderate positive correlation exists between deep approach and teacher trainees' response pattern to discordant supervisor feedback. A non-significant low correlation was established between surface approach and the response pattern of pre-service teachers to discordant supervisor feedback when the deep approach to learning was controlled for. The present finding has yet corroborated major findings where deep learning has been associated with the tendencies to obtaining high academic achievement and getting meaning and intent within the scope of an activity or experience (Entwhistle, Tait & McCune, 2000; Cano, 2007). Hence, those who use deep learning approach are likely to use dissonance reduction strategies which would make them more knowledgeable in the dissonant cognition hence improving their capability to become better teachers.

Conclusion

The conclusion from this study is that each dimension of epistemic beliefs is independent from each other and as such pre-service teachers should be trained and encouraged to use dissonance reduction strategies as often as dissonance in cognition, beliefs or attitude that counter their previously held knowledge, cognition, beliefs or attitude occur. In addition to this, it is important for all stakeholders to understand the efficacy of deep approach to learning in helping pre-service teachers navigate the complexities of dissonance inducing beliefs, cognition, attitudes during teaching practice.

Implications

Student-teachers should therefore be aware of the possibilities and various knowledge areas of dissonance through supervisor feedback and the dissonance reduction approaches and strategies they could utilize to counteract them. These student-teachers should be made to be aware of the benefits of adopting a deep approach to learning and developing teaching competences. Teacher educators should also value and utilize deep approach to facilitating teaching practice orientation programmes, teaching methods classes and micro-teaching so that pre-service teachers could benefit maximally from their teaching practice experience and from their practice teaching when they subsequently qualify for and are employed as professional teachers. Supervisors during orientation programmes should be encouraged to be open minded and adopt a collaborative stance in the course of performing their duties as supervisors. This study also supports the need for the adoption and incorporation of reflective practices into teaching practice exercises.

Also, there is the need for including supervisor training as part of the teaching practice implementation cycle. This will enable deep-seated issues of supervision styles

and leadership, recent thinking and knowledge in pedagogical practices and handling cognitive dissonance be discussed. Such training forum could also serve as an institutional feedback mechanism which is missing in the teaching practice cycle at the time of this research report.

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Teaching collaboration in networks: analysis in public schools in Bogotá, Colombia across modalities and levels

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Abstract

This study analyzes the manner in which the positive perception of the "Program to promote and support innovative teachers" serves as a mediator in the relationship between participation in professional networks and collaborative cohesion. In addition, the text examines how this phenomenon varies according to the educational modality in question (i.e., primary education versus technical secondary education) within the context of public institutions in Bogotá. The sample consisted of 197 elementary, primary, and technical secondary school teachers selected from a cross-sectional quantitative perspective using a structured survey to measure network participation, program perception, and collaborative cohesion. Moderate mediation analysis and non-parametric tests were conducted to identify differences by educational modality. The results indicate that the positive perception of the mentoring programme significantly mediates the relationship between participation in teacher networks and collaborative cohesion. The aforementioned effect is more pronounced and direct in technical upper secondary education, where autonomy and reciprocity prevail. Conversely, in primary education, the effect is indirect and contingent on structuring and external accompaniment. A statistically significant discrepancy exists between the various modalities, which is indicative of the impact of institutional factors. In summary, the present study demonstrates the significance of programmatic perception as a mediator in teacher collaboration and underscores the necessity for diversified support policies according to educational modality. The findings provide criteria for adapting support programs in Latin American education systems and analogous international contexts.

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Introduction

Teacher collaboration has been consolidated as a fundamental axis for educational innovation and the improvement of school quality at the international level. In the domain of primary and secondary basic education, collaboration assumes a strategic work dimension, particularly among educators who are members of professional networks. This strategic collaboration facilitates the exchange of knowledge, the collective construction of solutions to educational challenges, and the strengthening of learning communities. It has been demonstrated that institutional support for collaborative processes is a significant factor in the promotion of innovative and sustainable pedagogical practices. (García-Martínez et al., 2021; Liu & Huang, 2025; Ventista et al., 2024).

Nonetheless, empirical evidence from Bogotá, Colombia, demonstrates that teacher collaboration engenders significant tensions and is not homogeneous. The present article offers preliminary results from a doctoral project that is developing evaluative research. on the *"Program to promote and support innovative teachers"* implemented in Bogotá. The main objective is to *analyse the conditions that shape the collaboration between primary and secondary school teachers who participate in pedagogical networks, in the context of the support received through the programme, oriented towards processes of educational innovation*. This approach facilitates comprehension of the progress, challenges, and opportunities encountered by teachers in Bogotá in the consolidation of collaborative and innovative practices. It also enables identification of factors that facilitate or hinder collaboration and assessment of the impact of the strategies promoted by the program on the transformation of educational practices and the strengthening of the primary and secondary educational system.

The following sections provide the background information regarding the program, as well as the levels and types of education in which teacher collaboration occurs. Subsequent to this introduction, the theoretical framework for approaching teacher collaboration is presented, along with the methodology, the procedures used, and the results.

Contextualisation

Program description

Colombia's education system is characterized by a collaborative effort among various governmental entities, educational institutions, and stakeholders. This collaborative effort is aimed at ensuring the effective implementation of educational policies and the development of teacher capacity. Bogotá, as the capital city, functions as a central hub for these initiatives, with agencies responsible for educational governance and innovation.

The "Program to promote and support innovative teachers" operates through the Secretariat of Education of Bogotá (SED) and the Institute for Educational Research and

Pedagogical Development (IDEP). The SED is responsible for the oversight of the city's educational system, including its administration, planning, and regulation. The responsibility of IDEP is advance educational research, and to create teacher support and training for innovation in education. In this context, the program's main function is to establish and strengthen networks among teachers, research groups, and innovation teacher´s groups to facilitate collaborative practices and the exchange of pedagogical strategies in Bogotá's schools.

By connecting various teacher communities and supporting the deployment of innovative teaching methods, the program seeks to enhance instructional practices and contribute to improved educational outcomes. This initiative fits within broader efforts to institutionalize innovation and professional growth as central components of the education system's modernization process.

Levels and modalities of education in Colombia

In order to analyze the collaborative work of teachers, it is essential to understand the structure of levels and modalities of the Colombian education system. Each stage and modality present a set of challenges and opportunities that necessitate distinct forms of collaboration.

The Colombian educational system is structured into three distinct stages, each characterized by specific levels of academic instruction and learning objectives: pre-school (for children aged 3 to 5), primary education (five grades, approximately between 6 and 10 years old) and secondary, which is divided into basic secondary (four grades, from 11 to 14 years old) and *technical upper secondary education* (two final grades, generally from 15 to 17 years old). Upon completion of secondary education, students obtain a baccalaureate degree, which can be either academic or technical, depending on the modality pursued.

In the context of the Colombian education system, basic secondary education is organized into two distinct modalities: academic and technical. The academic stream is oriented towards the development of competencies in science, humanities, arts, and foreign languages. The objective of this preparatory education is to equip students with the necessary skills and knowledge to successfully transition to higher education.

The technical modality is characterized by a dual approach to education, integrating general education with specialized training for the workforce and the productive sectors. This approach is designed to equip students with the necessary skills and credentials to pursue higher education and secure employment in technical occupations upon completion of secondary education.

Within the technical modality, three principal submodalities stand out, each with specific educational objectives and curriculum emphases: general technical education, commercial technical education, and normalista or pedagogical emphasis programs.

General technical education focuses on developing scientific and technical competencies tailored to various industrial and productive fields. Students receive both

theoretical instruction and hands-on training aimed at preparing them for emerging technologies and industry practices. Typical areas of specialization include manufacturing, information technology, and environmental management. This modality emphasizes applied knowledge and practical skills, which enable graduates to enter directly into technical roles within the labor market or pursue further education in technical disciplines.

Commercial technical education centers on preparing students for roles in commerce, finance, administration, and related service sectors. This modality strives to balance theoretical understanding with real-world applications in commercial contexts.

Normalista or pedagogical emphasis programs prepare students for careers in education, especially as future teachers of basic education levels. These programs emphasize pedagogical theory, and didactics. Alongside core academic subjects, students acquire specific skills related to teaching methodologies and child and adolescent development.

Each technical submodality corresponds to different vocational profiles and institutional contexts, influencing collaborative practices among teachers and the implementation of innovation processes.

Theoretical references

Teacher collaboration is defined as a structured, intentional and sustained process of professional interaction between peers. This process is aimed at collectively generating pedagogical solutions, jointly developing teaching resources, and sharing reflections on educational practice, and this concept extends beyond mere cooperation or the fulfilment of shared tasks. It involves building a professional culture based on interdependence, mutual learning, and the ongoing enhancement of teaching practices, also teacher collaboration is grounded in autonomy and mutual trust, and is understood as teamwork based on shared responsibility and purposeful relationships oriented towards common goals. (Ahn, 2016; Mora-Ruano et al., 2019)

This approach posits that professional development and teacher collaboration necessitate not only individual willingness but also institutional conditions that facilitate frequent and meaningful knowledge sharing, in addition to the provision of necessary support to achieve sustained school improvement. Precisely, teacher colaboration concept constitutes an element of the theoretical model of professional learning communities (hereafter PLCs) where collaborative work is supported by shared values, norms, and goals, as well as by structures that foster interdependence. (de Jong et al., 2022; Shauly & Avargil, 2023)

It seems that this definition, based on recent literature and the guidelines of the original instrument, integrates structural, pedagogical, and relational dimensions. The structural dimension includes the frequency and quality of the exchange of materials and experiences. The pedagogical dimension includes the co-design of assessments, joint

planning, and classroom innovation. The relational dimension includes trust, co-responsibility, and a sense of professional community.

Teacher collaboration in addressing emergent challenges underscores the critical role of sustained interaction and the systematic identification of common challenges. These components are widely recognized as foundational to the effective operation of Professional Learning Communities (PLCs) (Ahn, 2016; Karsenty et al., 2024; Shauly & Avargil, 2023) and serve as an analytical framework for examining collaborative processes.

Methodology

The present study employs a cross-sectional, quantitative methodological design. The data were collected through the implementation of a structured survey composed of 50 questions on a Likert scale. This survey comprised a total of 213 items and required approximately 20 minutes to complete. The survey was administered to a purposively selected sample of teachers from public educational institutions in Bogotá, Colombia. These teachers are engaged in collaborative work networks and have participated in "T*he program to promote and support innovative teachers"*. The sample included teachers from various educational levels (pre-school, primary, and secondary) and from different institutional modalities (academic and technical), which facilitated analysis of teacher collaboration in terms of these variables.

Objectives and hypotheses

Objective: Analyze the conditions that influence collaboration between primary and secondary school teachers participating in pedagogical networks within the framework of support provided by the Program to Promote and Support Innovative Teachers, which is focused on fostering educational innovation processes.

Hypothesis: The positive perception of the *Program to promote and support innovative teachers* significantly mediates the relationship between participation in teacher networks and collaborative work, with differential effects according to educational modality.

Research question: How does the perception of the *Program to promote and support innovative teachers* significantly mediate the relationship between participation in teacher networks and collaborative work, and how does this effect vary by educational modality?

Participants

A total of 380 teachers were invited to participate in the survey, of which 197 participated. Regarding gender distribution, 62% of the subjects were female, 31.15% were male, and 0.79% were classified as "other." The age range of the subjects was from 32 to 57 years old.

In regard to their educational attainment, the majority of the participants, specifically 80%, have obtained a Bachelor's degree. This degree is designed to prepare individuals for careers in education, offering a comprehensive foundation in various pedagogical domains. It is comparable to the Bachelor of Education degree in other educational systems. 17.39% are professionals in specific disciplines and 1.98% are trained as teacher educators, which implies secondary education with an emphasis on pedagogy and qualifies them to teach in pre-school and primary education.

In addition, 93.68% of teachers have specialised or master's degrees, and 28.85% have reached doctoral level. In terms of employment, 86.11% have a permanent contract and 13.89% have a temporary contract. 85.31% of teachers have been employed for more than three years. 85.31% have been employed for more than seven years, while 4.76% have been employed for between one and two years, another 4.76% for between three and four years, and 5.16% for between five and six years.

Moreover, the vast majority of the participants, specifically 93.68%, possess either a specialization or a master's degree, while a significant proportion, amounting to 28.85%, hold a doctoral degree. Regarding their employment relationship, 86.11% have a permanent contract and 13.89% have a temporary contract. 85.31% of the participants have been working for more than 7 years; 4.76% between 1 to 2 years; 4.76% between 3 to 4 years; 5.16% between 5 to 6 years.

Description of the instrument

The survey utilized in the present study comprises 50 Likert-type questions, amounting to a total of 213 items. It is estimated that the respondents will require approximately 20 minutes to complete the survey. The instrument's design is the result of a process of fusion and adaptation of two international references. The first of these references is the questionnaire. "Participation in digital professional networks and innovation in teaching practices" developed by the Chilean Ministry of Education's Education Research and Development Fund (FONIDE), (Salinas et al., 2011), and on the other, an open questionnaire from the Organisation for Economic Co-operation and Development (OECD), (Vincent-Lacrin, 2023) aimed at supporting the understanding and monitoring of educational innovation, as well as identifying drivers and differences according to school levels in different contexts.

The adaptation process facilitated the identification and validation of 17 key dimensions for the study of teacher innovation and collaboration in the Colombian context. Specifically, the "teacher collaboration" dimension analysed in this article corresponds to the section of the instrument that fully incorporates the items from the FONIDE-Chile survey.

Procedures

The preliminary stage of the implementation of the instruments involved the establishment of protocols for the utilization and implementation of the selected instruments. In regard to the program perception survey, the authors were contacted via email to request permission for its utilization, and they granted approval.

With regard to the OECD survey, the formats stipulated in the manual of tools and methods designed for its application and the Frascati 2015 manual were completed and submitted. (OECD, 2015; OECD/Eurostat, 2018; Vincent-Lacrin, 2023) The OECD questionnaire was translated from 47panish into 47panish and reviewed by two experts in the field of education, native 47panish speakers (one European, one Colombian) with an advanced level of English.

In regard to the distribution and application of the survey, a formal request was submitted to the government institutions responsible for implementing the program. The program coordinators were informed that all participants were part of WhatsApp groups, which was regarded as the primary means of communication. Consequently, with prior consent and permission from the groups, the survey was disseminated.

The survey was implemented using Question Pro software. To ensure a high response rate, a mass mailing strategy was employed, whereby postings were disseminated across various groups. This was complemented by the deployment of personalized reminder messages via WhatsApp over a period of three weeks. Furthermore, a raffle was organized to incentivize participation. The survey was disseminated via WhatsApp and email, and 197 teachers provided responses.

The participants were granted the option to disengage from the data collection process at any time. In the online version, participants were provided with detailed information about the purpose of the research, the conditions for conducting the research and obtaining informed consent to participate. Furthermore, the subjects were informed that their participation was voluntary, and that all data collected would be treated confidentially.

The statistical processing of the data was executed in a series of interconnected stages, with the objective of organizing and analyzing the information. First, the non-parametric Kruskal-Wallis test was employed to compare differences between independent groups on ordinal variables. This test is suitable for likert-type scales and does not require assumptions of normality. This analysis enabled the identification of substantial discrepancies in the medians of the groups studied.

Subsequently, Principal Component Analysis (PCA) with Varimax rotation was employed. PCA is a multivariate technique that reduces dimensionality and groups variables into orthogonal components. This facilitates the interpretation of latent patterns and the identification of relevant thematic dimensions. The selection of components was based on statistical criteria, including the Kaiser criterion (eigenvalues greater than 1) and a factor loading threshold of 0.4 for the inclusion of variables in each

dimension. Finally, the utilization of boxplots was instrumental in the visualization of the distribution, dispersion, and the presence of outliers in each dimension. This procedure facilitated a comparative analysis of central tendencies and an assessment of the heterogeneity of the data across the various groups that were subjected to analysis.

As indicated by the statistical process previously delineated, a total of 17 dimensions pertaining to innovation and collaboration were identified. The present article focuses on the results of the *"Teacher Collaboration Dimension"* which in turn includes two variables of analysis. 1) teacher collaboration according to the educational level to which the teacher belongs and 2) teacher collaboration according to the mode of education.

Results

The statistical findings related to the *"Teacher collaboration dimension"* are presented below in order of priority. This analysis evaluates several key variables, including the frequency of interactions among teachers who encounter similar challenges, the dissemination and discussion of innovative experiences, the willingness of teachers to share knowledge with their peers, participation in mutual support groups, and the proactive search for information aimed at fostering educational innovation. These variables collectively provide a comprehensive overview of the extent and nature of collaborative practices within the teaching community, highlighting both strengths and areas for further development in promoting effective professional learning environments.

Interpretation respects the educational modality variable:

The Kruskal-Wallis test was selected on the basis of its proven efficacy in handling non-normal data distributions and its optimality for the purpose of comparing medians across multiple independent groups. In order to ensure a comparison between groups, non-parametric statistical techniques were employed. Employing this method ensures that potential deviations from normality present in teachers' responses are accounted for, thereby strengthening the validity of the statistical conclusions.

Regarding educational modalities, the Kruskal-Wallis test shows significant differences ($H = 12.645$, $p = 0.0131$) between the groups. In this section, the utilization of boxplots is employed to visually illustrate the differences that have been identified through the implementation of the Kruskal-Wallis test. This graphical approach facilitates more accessible interpretation of the data's distribution, thereby enabling the identification of patterns, such as median differences and the range of responses, across the educational modalities under study.

To facilitate a comprehensive understanding of the distribution of perceptions regarding collaborative learning across different educational modalities, this boxplot offers a graphical summary of the data, allowing for an immediate comparison of key statistical features among the groups analyzed.

The boxplot is a graphical representation of the median, interquartile range (IQR), and potential outliers for each educational modality. It is a useful tool for understanding the central tendency and variability of responses, as it provides a visual representation of the distribution of data. The utilization of a boxplot facilitates the discernment of the distribution of values. This graphical representation enables the identification of not only the modalities that exhibit higher or lower valuations of collaborative learning but also the degree of consistency or heterogeneity within each group. It is important to interpret the position and spread differences observed in each box plot, as overlapping interquartile ranges may indicate that apparent differences in medians are not always statistically robust in pairwise comparisons. Consequently, this visual interpretation should be regarded in conjunction with the corresponding p-values to prevent an overestimation of group differences.

Figure 1

Distribution of Dimension teacher collaboration by modalities variable (n=194)
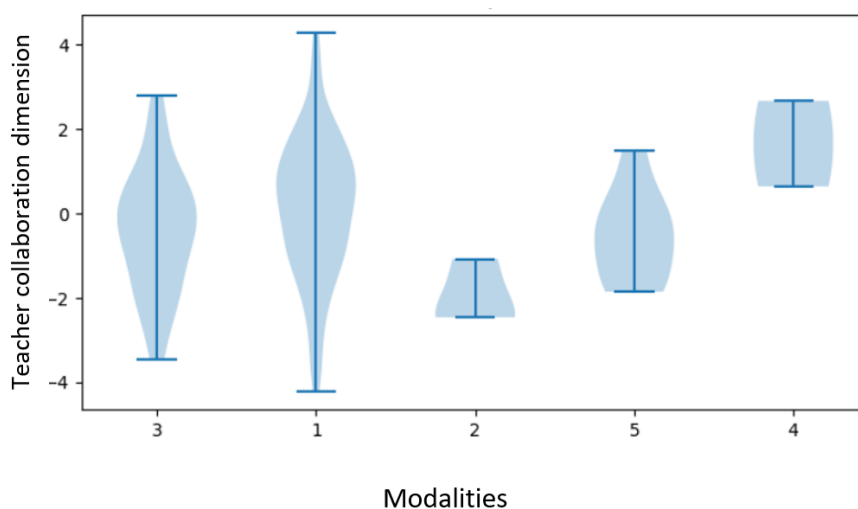
The following table summarizes the educational modalities examined in the study, along with their corresponding numerical designations:

Table 1

Educational modalities

Modality Number	Educational Modality
1	Preschool and primary education
2	Secondary education with technical modality, emphasis commercial
3	Secondary education with academic modality
4	Secondary education with technical modality
5	Other

The boxplot reveals that modality 4 (secondary education with technical emphasis) is characterized by a notably concentrated distribution of positive values and a high median. This finding suggests a strong and consistent appreciation for collaborative learning among its participants. In contrast, modality 1 (Primary education) demonstrates a much wider and more heterogeneous spread, indicating substantial variability in perceptions within this group. Modalities 2 and 5 tend to cluster around negative values, while modality 3 (Secondary education with academical emphasis) occupies an intermediate position, with a relatively balanced distribution.

Interpretation respects the educational level variable:

To facilitate an examination of how collaborative learning is valued across educational levels, a box plot was created to visually illustrate the distribution of responses for each category of the education level variable.

The utilization of boxplots for the presentation of valuations pertaining to collaborative learning across various educational levels serves a dual purpose. Firstly, it serves to underscore the similarities and differences that characterise these levels. Secondly, it reinforces the value of visual tools in complementing numerical statistics. This approach facilitates the identification of subtle trends, such as homogeneity or the presence of outliers, that may not be immediately apparent from statistical tables alone. The ensuing graph summary is of particular value, as it facilitates immediate and intuitive comparison of the central tendency, dispersion, and presence of outliers within each group.

The boxplot indicates that the medians and interquartile ranges are remarkably similar across all educational levels. This finding indicates a consistent central tendency and variability in the valuation of collaborative learning regardless of the level. Furthermore, the distribution of outliers appears homogeneous, suggesting that extreme values - whether particularly high or low- are not concentrated in any specific educational group, but rather are distributed throughout the sample.

Figure 2

Distribution of Dimension teacher collaboration by level variable (n=194)
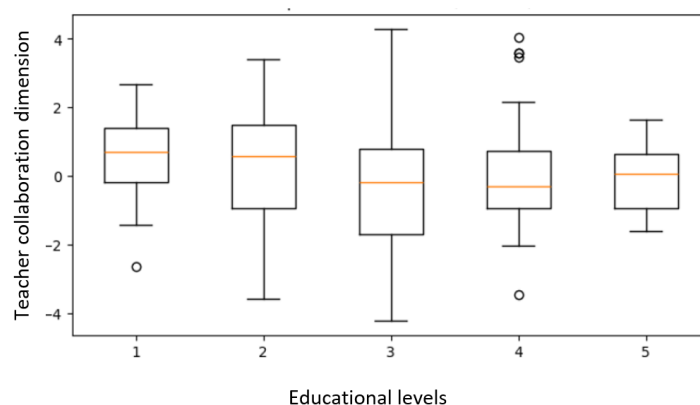
Table 2

Educational levels

	Educational levels
1	Preschool
2	Primary
3	Secondary education
4	Upper secondary education – Academical
5	Upper secondary education - Technical

This visual representation provides a complementary analysis of the statistical findings. Specifically, Spearman's correlation reveals a weak yet statistically significant negative relationship between educational level and the valuation of collaborative learning. (ρ = -0.157, p = 0.0291), The Kruskal-Wallis test does not demonstrate the presence of statistically significant differences between the categorized educational levels (H = 9.088, p = 0.0589). This finding indicates that the observed trend is gradual and does not result in the formation of sharp distinctions between groups.

Table 3

	valor	
0	rho	-0.156728
1	p_rho	0.029082
2	KW_H	9.087659
3	KW_p	0.058945
4	n	194

The variables that are most influenced by this trend are the frequency of meetings among teachers facing similar challenges and participation in mutual support groups. These variables tend to decrease as the educational level increases. In contrast, Interest in acquiring knowledge regarding innovative experiences and the pursuit of information to promote educational innovation remain consistent across all levels.

The graph reveals patterns that are consistent with the presence of similar medians across all levels (approximately between -0.5 and +1). Additionally, there is a comparable interquartile range and a relatively homogeneous distribution of outliers.

Table 4

Description by level

Level	Median	IQR Range	Values Atypical	Trend
1	~+1	Broad	Moderates	Slightly positive
2	~+0.5	Moderate	Few	Neutral
3	~-0.5	Compact	Some superiors	Slightly negative
4	~-0.5	Moderate	Several	Slightly negative
5	~+0.5	Compact	Few	Neutral

The observed trend (ρ = -0.157) indicates a negative correlation between the appreciation of collaborative learning among teachers and their educational level, suggesting a slight decrease in appreciation with increasing educational level. Taken together, these findings suggest that while specific methodologies or levels of education may exhibit slight variations in perceptions of collaborative learning, overall trends remain relatively stable. The limited range of variation between groups suggests the potential influence of institutional or systemic factors that broadly shape collaborative practices, rather than sharply dividing them by modality or level.

Discussion

The discussion section of the article aims to interpret and contextualize the statistical results obtained for the "Teacher collaboration dimension" within the broader framework of collaborative research and practice. The analysis emphasizes the multifaceted nature of collaboration by highlighting the relationships that define it. These results align with previous literature regarding collaboration approaches, especially in interdisciplinary contexts.

Furthermore, the results of the study suggest that collaborative efforts may be viable for measurement and evaluation through the application of data-driven instruments. These instruments possess the capacity to facilitate the analysis of research trends, the mapping of partnerships, and the establishment of institutional benchmarks.

The divergency in collaborative teaching practices between technical upper secondary education and primary education can be elucidated through the framework of professional learning communities (PLCs) theory. PLCs are defined as groups of educators who, through systematic interaction, reflection, and shared learning, endeavor to enhance their teaching practices and improve student outcomes.

Within the context of the primary education system, there is a prevalent perception that teacher collaboration is confronted with significant structural and cultural challenges. It appears that curricular heterogeneity, diversity of interests, and a lack of consolidated support structures may present certain challenges to the consolidation of autonomous professional communities. (Burgin, 2022; Stoll et al., 2019)

In this context, the involvement of facilitators, external accompaniment, and the implementation of protocols or mentoring could play a crucial role in fostering collaboration and addressing potential asymmetries. The literature suggests that the PLC could be considered a guided learning space. In such cases, it seems that trust-building and the generation of a shared vision might require more structured and sustained interventions. (de Rivas et al., 2025; Karsenty et al., 2024; Liu & Huang, 2025)

The teachers' pursuit of information for the purpose of innovation is indicative of proactivity and active learning, both of which are considered essential principles of Professional Learning Communities (PLCs). In academic secondary education, it seems that the integration of digital resources and shared knowledge has the potential to enable

a balance between mutual support and effective information management. In social contexts characterized by limited access to economical resources, the function of institutional programs as facilitators assumes paramount importance, serving as a conduit for the integration of external knowledge with local experiences. (AlAjmi, 2022; Ortega et al., 2023; Pennell & Firestone, 1996)

In technical upper secondary education, collaboration is often seen in interdisciplinary projects and shared objectives. The goal of these collaborative efforts is to foster autonomous and cohesive communities. The development of effective collaboration may be influenced by a variety of factors, including prior experience, the presence of internal facilitators, and the clarity of common goals. These factors contribute to the establishment of smooth and sustainable collaboration. As demonstrated by (Fletcher et al., 2024; Karsenty et al., 2024; Liu & Huang, 2025), elements such as trust, reciprocity, distributed leadership, and flexible organizational structures play a central role in their functioning. (de Jong et al., 2022; Karsenty et al., 2024; Shauly & Avargil, 2023)

In the context of technical upper secondary education, the presence of professional cohesion and collective problem-solving is indicative of intentional relationships and group autonomy. In contrast, within the context of primary education, the importance of institutional mediation in the creation of effective collaborative spaces is underscored by the presence of contextual heterogeneity. (Mora-Ruano et al., 2019)

As indicated by the principle of collective learning, which is fundamental to professional learning communities (PLCs), exposure to the innovative experiences of other teachers is a crucial aspect of these communities. In the context of professional learning communities (PLCs), the exchange of knowledge among colleagues and the active engagement in learning activities have been demonstrated to improve pedagogical practices and enhance student outcomes. (de Jong et al., 2022; de Rivas et al., 2025).

In contexts characterized by high curricular diversity, such as primary education, this exchange functions as a compensatory mechanism that enables the adaptation of approaches and practices. It underscores the significance of institutional support in the systematization and dissemination of successful cases, thereby fostering a culture of innovation and a sense of professional belonging.

The analysis of reciprocity in the sharing of knowledge and experiences facilitates the identification of the degree of maturity of teacher collaboration. In technical upper secondary education, reciprocity and participation in interdisciplinary projects reflect the ideal of co-responsibility and autonomy that characterise mature PLCs (de Rivas et al., 2025; Karsenty et al., 2024; Kolleck, 2019) The asymmetry observed in primary education, with knowledge reception prevailing over sharing, underscores the necessity of developing supportive structures and mentoring to balance this exchange.

Participation in mutual support groups is a concrete manifestation of the support structures required by PLCs. In the context of technical upper secondary education, self-managed groups exemplify autonomy and ownership in collaborative processes.

Conversely, the reliance on external support in primary schools underscores the necessity for progressive autonomization strategies, as highlighted in research on teacher professional development. (Castro-Cáceres & Lillo, 2024; Liu & Huang, 2025)

These modal contrasts are also reflected in the sustainability of collaborative practices. Collaboration is a key component of both technical upper secondary education and primary education. In the former, it is sustained and evolves from professional autonomy and distributed leadership. In the latter, the continuity of PLC is more dependent on the provision of resources, protected time for collaboration, and systematic support from school management or external agents. (Ourania et al.; Liu and Huang; Mora et al.).

The literature emphasizes the necessity of adapting professional development and coaching strategies to the specific characteristics of each modality. This adaptation is important to avoid homogeneous approaches that fail to consider the organizational and cultural particularities of teaching teams. (de Rivas et al., 2025; Ortega et al., 2023)

In summary, the theory of professional learning communities offers a way to understand the differences in teacher collaboration as the result of the interaction between structural, cultural, and leadership factors. Autonomy, trust, and clarity of goals might favor the consolidation of PLCs in technical upper secondary education. In elementary and primary education, it might be a good idea to consider ways to strengthen support structures and collective construction processes. This could contribute to the development of sustainable and effective professional communities.

Therefore, the study may be suggesting that program mediation could be a contributing factor to the observed differences in collaborative cohesion across educational modalities. The study addresses the primary research question by demonstrating that the perception of the program mediates the relationship between participation and cohesion through distinct modal pathways. Specifically, it finds that there is a direct and autonomous route in technical education, and an indirect and structured route in basic education. The efficacy of this mediation is contingent upon the program's capacity to adapt to the distinctive institutional and contextual realities. This adaptive capacity enables the program to foster meaningful collaboration and sustainable cohesion, tailored to the specific needs and dynamics of each modality.

Conclusions and limitations of the research

In conclusion, the findings of this study provide key elements for education policy and teacher education in complex urban contexts. The results underline the importance of designing differentiated accompaniment and professional development strategies that recognise the particularities of each educational modality and respond to the specific challenges of teachers in basic/primary and *technical upper secondary education*. For public policy, this implies prioritising the reduction of administrative burdens, ensuring protected time for collaborative work and promoting flexible structures that favour both the autonomy of teaching networks and access to mentoring and external support in

more heterogeneous contexts. Thus, it highlights the need for policies that not only encourage collaboration, but also remove structural barriers and create conditions conducive to collective learning.

In the field of teacher training, the results suggest the relevance of strengthening competences for the facilitation of professional learning communities, as well as incorporating hybrid modalities that combine face-to-face mentoring and digital training, especially in contexts where curricular heterogeneity and lack of resources limit the sustainability of collaborative practices. It is also essential to foster reciprocity and horizontal exchange of knowledge, so that collaboration does not depend exclusively on institutional intervention, but emerges as a sustainable and autonomous professional practice.

However, this study has some limitations that need to be considered. The sample is restricted to teachers in the city of Bogotá, which may affect the generalisability of the results to other contexts. In addition, the research focused on teachers active in networks, which could potentially underestimate the challenges faced by those who do not participate in these spaces.

Based on these results, future lines of research could be oriented towards longitudinal studies to analyse the sustainability of professional learning communities over time, as well as quasi-experimental designs to assess the impact of specific interventions, such as the reduction of administrative burden or the implementation of cross-mentoring. It would also be relevant to explore how teacher collaboration is transformed in contexts of greater decentralisation or in cities with different levels of resources.

Finally, while the findings of this study are situated in the reality of Bogotá, it is possible that they present elements that could be transferable to other Latin American and international urban contexts that share similar structural and organizational challenges. The necessity for flexible policies, the significance of teacher autonomy, and the value of professional learning communities have been identified. The applicability of these principles to diverse educational systems is contingent upon their adaptation to the institutional and cultural environments of each territory.

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Evolving Trends in Teacher Self-Efficacy Research: A Bibliometric Review (2020–2025)

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Abstract

Despite the rapid expansion of self-efficacy research in education, little is known about how thematic priorities and conceptual orientations have evolved in recent years—particularly in response to changing educational contexts and technological developments. Moreover, existing reviews often focus on synthesizing outcomes rather than mapping structural shifts in the field. To address this gap, this study conducts a bibliometric analysis of self-efficacy research in education, examining publication patterns, thematic trends, and temporal shifts. It does not synthesize effect sizes or outcomes as in a statistical meta-analysis. The analysis draws on 1,883 articles published between 2020 and 2025 in the Springer and ScienceDirect databases. Using a systematic coding protocol and correlational analysis, we identified significant shifts in research priorities and thematic orientations across this five-year period. Results revealed a marked decline in publications explicitly focused on teacher self-efficacy (r = –0.210, p < .01), concurrent with increasing emphasis on technology integration and systemic approaches. Context-specific self-efficacy dominated the thematic landscape (37.5%), followed by technology integration (22.2%). Significant database specialization patterns emerged, with Springer publications substantially more likely to address teacher self-efficacy than ScienceDirect (47.7% versus 1.8%). Primary education settings received minimal attention (4%), despite showing a higher likelihood of focusing on teacher self-efficacy when addressed. Conceptual analysis of primary education studies revealed four distinct operational dimensions of teacher self-efficacy: general instructional efficacy, domain-specific efficacy, contextual/relational efficacy, and process-oriented efficacy. These findings document a field in significant transition, moving from teacher-centered conceptualizations toward broader systemic frameworks. The research patterns raise important questions about theoretical coherence and highlight considerable gaps in primary education contexts, suggesting the need for more integrative theoretical frameworks and targeted investigation of underrepresented educational settings.

Keywords: teacher self-efficacy; bibliometric analysis; research trends; preschool and primary education; educational psychology

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Introduction

Background and rationale for bibliometric study

Teacher self-efficacy, defined as educators' beliefs in their capabilities to effectively manage classroom tasks and foster student learning, has been a pivotal construct in educational research for decades. Its influence extends to critical outcomes such as teacher motivation, instructional quality, student achievement, and overall school effectiveness. Given the dynamic and evolving nature of educational environments—especially in light of recent global challenges such as the COVID-19 pandemic—understanding the development and shifts in teacher self-efficacy research is essential. Over the past five years (2020–2025), the field has witnessed significant growth and diversification, encompassing new themes such as digital competence, teacher well-being, inclusive education, and the impact of socio-cultural factors on self-efficacy beliefs. However, despite this proliferation of studies, a comprehensive synthesis capturing the structural and thematic evolution of teacher self-efficacy research during this period remains lacking.

Bibliometric analysis offers a robust quantitative approach to systematically map the intellectual landscape of a research domain. By examining publication patterns, influential authors, collaboration networks, and emerging research trends, bibliometric methods provide valuable insights into the knowledge structure and developmental trajectory of a field. This study aims to fill the existing gap by conducting a bibliometric analysis of teacher self-efficacy literature published between 2020 and 2025, thereby illuminating evolving trends and identifying future directions for research and practice.

Importance of the research topic in the scientific community

Teacher self-efficacy has been widely acknowledged as a significant construct in educational research due to its strong associations with teacher motivation, instructional quality, and student outcomes (Bandura, 1997; Tschannen-Moran & Woolfolk Hoy, 2001). However, its operationalization and measurement remain complex, making it an elusive concept in both theory and practice.

High levels of self-efficacy among teachers are associated with greater instructional innovation, resilience to challenges, and commitment to professional growth, all of which contribute to improved educational quality.

In recent years, the increasing complexity of classroom environments, technological advancements, and shifting educational policies have heightened the relevance of teacher self-efficacy research. Understanding how teachers perceive their own effectiveness in diverse and evolving contexts is critical for designing targeted professional development programs, shaping supportive school cultures, and informing policy decisions.

Moreover, as the scientific community embraces interdisciplinary and data-driven approaches, bibliometric analyses of teacher self-efficacy research provide a valuable lens through which to assess the field's growth, collaboration patterns, and thematic shifts. This meta-perspective not only aids researchers in identifying influential works and gaps but also assists practitioners and policymakers in aligning their efforts with emerging evidence-based trends.

Given these factors, a bibliometric study focusing on the period from 2020 to 2025 offers timely and actionable insights into the trajectory of teacher self-efficacy research, underscoring its ongoing importance within the broader scientific discourse on education.

Despite decades of scholarly attention, definitional ambiguities continue to persist, complicating both theoretical development and empirical investigation. While the multifaceted nature of TSE reflects the complexity of teaching itself, this very complexity necessitates greater conceptual precision. Without a clear and consistent operational definition, research on TSE risks producing fragmented findings that are difficult to compare or synthesize. Therefore, regardless of the challenges inherent in defining such a dynamic construct, it is imperative for researchers to articulate explicit operational definitions of TSE to advance theoretical clarity, support methodological rigor, and foster meaningful applications in practice.

Despite its theoretical prominence since Bandura's initial conceptualization in the 1970s, the precise boundaries and operational definitions of teacher self-efficacy remain contested terrain (Bandura, 1977; Tschannen-Moran & Hoy, 2001). These definitional ambiguities have persisted across decades of scholarship, contributing to measurement inconsistencies and theoretical fragmentation that constrain cumulative knowledge development in this domain (Klassen et al., 2011; Dellinger et al., 2008; Duffin et al., 2012).

The original Bandura formulation defined self-efficacy as "beliefs in one's capabilities to organize and execute the courses of action required to produce given attainments" (Bandura, 1997, p. 3). When applied to teaching contexts, however, this apparently straightforward definition encounters numerous complications. The very nature of teaching—with its improvised responses to unpredictable classroom situations, reliance on interpersonal dynamics, and context-dependent effectiveness criteria—resists neat categorization within efficacy parameters (Woolfolk Hoy & Davis, 2006). Teaching lacks clear success metrics found in fields where efficacy was initially studied, such as physical tasks or therapeutic interventions with definitive outcomes (Wheatley, 2005). Examination of the literature reveals at least three distinct conceptual traditions that diverge in their understanding of teacher self-efficacy. The first, stemming directly from Bandura's social cognitive theory, emphasizes task-specific efficacy judgments—a

teacher's belief in their capability to implement instructional approaches or classroom management techniques (Bandura, 1997). A second tradition, influenced by Rotter's locus of control construct, interprets teacher efficacy as beliefs about teaching efficacy more generally, representing confidence in the profession's capacity to influence student outcomes despite external constraints (Gibson & Dembo, 1984). The third tradition treats teacher self-efficacy as a relatively stable personality trait or disposition, focusing less on context-specific judgments and more on generalized self-perceptions of teaching competence (Pajares, 1996).

These conceptual traditions have spawned measurement instruments that operationalize the construct in markedly different ways. The Teacher Efficacy Scale (TES), Teachers' Sense of Efficacy Scale (TSES), and Science Teaching Efficacy Belief Instrument (STEBI) each capture distinct aspects of efficacy beliefs yet are frequently treated as equivalent in research syntheses, creating interpretive difficulties (Tschannen-Moran & Hoy, 2001; Riggs & Enochs, 1990). Factor analyses across these instruments yield inconsistent dimensions, with some revealing unitary construct while others identify multiple factors such as instructional efficacy, management efficacy, and engagement efficacy (Duffin et al., 2012). This dimensional instability further complicates theoretical integration across studies (Henson et al., 2001).

The boundaries between teacher self-efficacy and adjacent constructs remain poorly delineated. Conceptual overlap exists with teacher identity, professional self-concept, teaching self-confidence, and perceived teaching competence (Pajares, 1996). Researchers often struggle to distinguish empirically between these constructs, particularly when self-report measures are employed (Labone, 2004). This terminological imprecision leads to situations where substantively different constructs are investigated under the self-efficacy umbrella, or conversely, where identical phenomena are studied under different conceptual labels (Bandura, 2006). The temporal dimension of efficacy beliefs introduces additional ambiguity. Bandura originally conceptualized self-efficacy as both situation-specific and malleable (Bandura, 1997). However, longitudinal studies demonstrate remarkable stability in teacher efficacy scores across career stages, challenging the presumed state-like nature of the construct (Woolfolk Hoy & Burke-Spero, 2005). This empirical stability has led some researchers to reconceptualize teacher self-efficacy as a trait-like characteristic that crystallizes during pre-service training and resists subsequent modification, while others maintain that meaningful fluctuations occur in response to contextual factors (Tschannen-Moran et al., 1998).

Contextual boundaries present another source of conceptual ambiguity. Teaching occurs across dramatically different contexts—from one-on-one tutoring to large lecture formats, from early childhood to adult education, from mainstream to specialized

settings. The field has not resolved whether teacher self-efficacy should be understood as context-general (applying across teaching situations) or context-specific (varying across distinct teaching domains and populations) (Ross, 1996). Research evidence suggests both positions have merit, with general efficacy beliefs coexisting alongside domain-specific efficacy judgments, yet conceptual models rarely accommodate this duality (Tschannen-Moran et al., 1998).

Cultural assumptions embedded in efficacy theory create further definitional problems. The construct emerged within a Western individualistic framework that emphasizes personal agency and individual capability beliefs (Oettingen, 1995). When applied in collectivist cultural contexts, where teaching effectiveness may be conceptualized through relational frameworks or as a manifestation of collective rather than individual capabilities, the construct's cultural validity becomes questionable (Klassen et al., 2010). Cross-cultural studies demonstrate systematic differences in how teachers conceptualize their efficacy, yet these findings rarely inform theoretical refinement (Bonneville-Roussy et al., 2019).

The behavioral referents for teacher self-efficacy remain surprisingly unspecified in much research. While the construct purportedly concerns capability beliefs regarding specific teaching actions, the field has not achieved consensus on which teaching behaviors constitute the proper referents for efficacy judgments (Wheatley, 2005). This gap contributes to a circular problem: without clear behavioral referents, teachers may interpret efficacy questions idiosyncratically, referring to whatever teaching behaviors they individually value or prioritize, thereby compromising measurement validity (Eells, 2011).

Neuroscientific approaches have recently identified neural correlates of efficacy judgments, locating them within anterior cingulate and prefrontal regions associated with self-referential processing and expectancy judgments (Babbie et al., 2019). However, these findings further complicate conceptual understanding by suggesting that efficacy beliefs may operate through multiple cognitive systems—with explicit, conscious efficacy judgments potentially distinct from implicit efficacy expectations that guide behavior without conscious awareness (Memory self-efficacy beliefs modulate brain activity when encoding real-world future intentions, 2013).

The diverse methodological approaches to studying teacher self-efficacy further exacerbate definitional confusion. Qualitative investigations often yield conceptualizations emphasizing narrative and identity dimensions, while quantitative approaches tend to operationalize the construct through fixed-response scales emphasizing cognitive judgments (Labone, 2004). Mixed-method research frequently reveals discontinuities between how teachers discuss their efficacy in interviews versus

how they respond to standardized measures, raising questions about which methodology better captures the construct's essential nature (Wyatt, 2014).

The current proliferation of technological innovations in education introduces additional conceptual challenges. Traditional teacher efficacy measures poorly capture beliefs about technological pedagogical capabilities, remote teaching competence, or efficacy for facilitating student learning in digital environments (Fanni et al., 2013). These emerging teaching contexts call into question whether existing conceptualizations adequately encompass contemporary teaching demands (Dilekli & Tezci, 2020).

These persistent ambiguities explain the paradoxical state of teacher self-efficacy research: a theoretically central construct that generates substantial research interest yet yields inconsistent findings and limited practical application. The field has not resolved whether teacher self-efficacy should be conceptualized as a general trait or task-specific state, whether it operates primarily through cognitive or affective mechanisms, whether it functions similarly across diverse teaching contexts and cultures, or even which precise capabilities constitute its proper behavioral referents (Wyatt, 2014).

Despite the long-standing theoretical centrality of teacher self-efficacy (TSE) in educational research, definitional ambiguities persist, limiting the field's capacity for cumulative knowledge building. As outlined above, these ambiguities span theoretical foundations, measurement tools, cultural assumptions, and behavioral referents. While rich in conceptual depth, the literature remains fragmented, with few attempts to systematically map how these conceptual tensions have evolved in recent years.

This fragmentation is especially critical in the context of recent transformations in education—such as the global shift to remote learning, rapid technology integration, and changing teacher roles amid policy and social disruptions. These developments have likely reshaped the conceptualization, application, and prioritization of TSE across the scholarly landscape. Yet, there is limited meta-level insight into how research agendas on TSE have adapted in response to these changes. Previous reviews have typically focused on summarizing empirical findings or assessing intervention outcomes (e.g., Zee & Koomen, 2016), but fewer studies have examined the structural evolution of TSE research itself: its publication trends, thematic shifts, and conceptual focal points.

In this context, a bibliometric approach offers a timely and necessary perspective. Bibliometric analysis enables the systematic mapping of publication patterns, keyword trends, and conceptual clusters, offering a macro-level understanding of how a research field is developing (Donthu et al., 2021; Aria & Cuccurullo, 2017). This approach is particularly valuable for fields like TSE, where the volume of publications has increased substantially, yet conceptual clarity remains elusive. Recent bibliometric studies in education have demonstrated the utility of such methods in illuminating knowledge

structures, identifying research gaps, and informing future theoretical development (Martínez-Ramón et al., 2023; Huertas & Aguaded, 2022).

Purpose and Objectives

The purpose of this study is to conduct both a bibliometric of 1,883 articles from Springer and ScienceDirect (2020–2025) and a conceptual analysis of teacher self-efficacy research in education, with a particular focus on how publication patterns and thematic emphases have evolved between 2020 and 2025—a period marked by considerable educational transformation.

Specifically, the study aims to:

O1. identify and categorize the emerging and declining thematic clusters within the teacher self-efficacy literature.

O2. measure changes in research emphasis, especially the documented decrease in explicit focus on teacher self-efficacy.

O3. assess the influence of publication venue and educational setting (e.g., primary schools) on these thematic and temporal patterns.

O4. highlight underexplored areas and emerging shifts in the conceptualization of teacher self-efficacy.

Research Questions

1. **What are the publication trends in teacher self-efficacy research between 2020**
and 2025?
 – This includes the annual number of publications, document types, and sources.
2. **What are the major research themes and emerging trends in teacher self-efficacy studies during this period?**
 – Using keyword co-occurrence and thematic mapping to identify dominant and evolving topics.
3. **Who are the most productive and influential authors, institutions, and countries in this field?**
 – The study examines author productivity, citation impact, and international collaboration
4. **Which articles, journals, and authors have received the highest scholarly impact within this timeframe?**
 – Citation and co-citation analyses are used to highlight foundational and high-impact works.

5. **How has the conceptual and intellectual structure of teacher self-efficacy research evolved during this five-year span?**
   – The study investigates shifts in research focus, conceptual frameworks, and methodological approaches.
6. **What gaps or emerging directions can be identified for future TSE research?**

By addressing these questions, the study provides a structured overview of recent developments in the field, helping scholars navigate an increasingly complex and conceptually diffuse literature base. Also, the study aims to contribute a strategic overview of recent developments in teacher self-efficacy research and offer guidance for future inquiries in this vital area of education.

Methodology

Data Collection and Retrieval

The Boolean search query applied identically in both databases was: ("self-efficacy" OR "self-efficacy") AND ("education" OR "learning")

Search filters included: Date range: January 1, 2000 – December 31, 2025; Language: English; Document types: Journal articles and conference papers

The initial search yielded 1,021 records from SpringerLink and 1,204 records from ScienceDirect, totaling 2,225 records.

Data Cleaning and De-duplication

All records were exported in RIS format and imported into Mendeley Reference Manager (version 2.X). An automated duplicate detection algorithm was first applied using Mendeley's built-in tool, which compares records based on title, authorship, publication year, and DOI.

Bibliometrics Analysis and Clustering

Thematic clusters were identified through co-word analysis using VOSviewer (version X.X), which applies a weighted modularity-based clustering algorithm to bibliometric networks, using Microsoft Excel (Microsoft 365) and R (version X.X) with relevant packages such as *bibliometrix* and *ggplot2*.

Bibliometric Indicators Analyzed includes publication volume by year and database; keyword co-occurrence analysis; thematic distribution; database specialization patterns; educational contexts; conceptual dimensions; correlational analysis

Text-Mining and Statistical Analysis

Text mining of titles and abstracts for temporal trend analysis was conducted using Microsoft Excel (Microsoft 365) supplemented by manual verification. Keyword frequency counts per year were computed, focusing on the terms "self-efficacy" and "self-efficacy." Pearson correlation analyses assessing temporal changes in keyword usage were performed using R (version X.X) with the stats package. Where applicable, regression analyses were conducted using R with the lm function.

Data visualization, including line charts and heatmaps, was generated using R with the ggplot2 package (version X.X).

Coding Protocol

A structured coding protocol was implemented to categorize articles based on three dimensions: topic, research method, and context. Two independent coders participated in the coding process. Both coders underwent a calibration session with a subset of 50 randomly selected articles to refine the coding scheme and ensure consistent application. Coding was performed manually using Microsoft Excel, with codes entered into a shared spreadsheet. Discrepancies were resolved through discussion, and where consensus was not achieved, a third researcher acted as adjudicator. Inter-coder reliability was assessed on a random sample of 100 articles, yielding Krippendorff's α = .951, indicating a high level of agreement.

Quantifying Temporal Shifts in Self-Efficacy Focus

To analyze the evolution of self-efficacy focus over time, we conducted keyword searches for the exact terms "self-efficacy" and "self-efficacy" within the titles and abstracts of all records, using Excel's text search functions, verified by manual checks. For each publication year (2000–2025), we calculated absolute counts and the percentage of articles mentioning self-efficacy relative to the total articles published that year. Pearson correlation was computed between publication year and percentage of self-efficacy mentions, resulting in $r = -0.210$, $p < .01$, indicating a significant decline. These trends were visualized using a dual-axis line chart (Fig. 1), showing both article counts and proportions with confidence intervals where applicable.

Assessing Venue and Context Effects

To explore differences by publication venue and research context, each record was tagged by source database (SpringerLink vs. ScienceDirect) based on metadata. Articles were also classified as "Primary context" if focused on direct educational settings (e.g., K–12, higher education) or "Non-Primary context" if education was not the main domain

(e.g., corporate training). Context categorization was based on metadata, titles, and abstracts and was part of the manual coding process. Comparative analyses and a heatmap visualization were used to display thematic emphasis differences across databases and contexts.

Data Collection and Analysis

This categorization allowed differentiated analysis of how these concepts interrelated within the literature. The articles were coded in SPSS within a confidence interval of 95%.

For the evaluation of the objectivity of the categories, the Krippendorff's Alpha (Kα) indicator was used

$$C = \frac{Number of items with disagreements}{Total number of units}$$

Yes=1- $\sum_{c=1}^{C} pc^2$

Where:

- PC is the proportion of category C in total encodings

- C is the total number of categories.

Krippendorff's Alpha (Kα) value for variables, when recoding them to test the objectivity of the research categories, was 0.951.

Analytical Tools

Two primary software tools were employed for bibliometric and network analysis:
- VOSviewer (version 1.6.19); Bibliometrix (R-package, version 4.1).

Results. Patterns emerging from quantitative analysis

The quantitative analysis revealed distinct temporal, thematic, and platform-based patterns in the literature on teacher self-efficacy within educational contexts.

Temporal Distribution

The temporal distribution of publications demonstrated steady growth in self-efficacy research within educational contexts. Data revealed a marked progression from 11 articles in 2020 (0.6% of the sample) to 832 in 2024 (44.2%), with a relative decrease in 2025 (399 articles, 21.2% of total, N=1883,). This pattern reflects a growing scholarly interest in self-efficacy constructs, culminating in 2024 before experiencing a partial decline in the most recent year analyzed.

Database-Based Distribution

Analysis across publication databases highlighted significant divergence in coverage and thematic emphasis. Springer hosted the majority of articles (52.8%, n = 995), demonstrating consistent publication across all years. In contrast, ScienceDirect (47.2%, n = 888) featured no relevant publications prior to 2023 but quickly amassed a substantial volume thereafter. A moderate positive correlation between database and publication year (r = 0.332, p < 0.01) indicates ScienceDirect's rising prominence in recent years as a key repository for self-efficacy research (Table 1).

Table 1

Distribution of articles on teacher self-efficacy in educational environments across the years and databases

			Year						Total
			2020	*2021*	*2022*	*2023*	*2024*	*2025*	
Data base	*Springer*	Frequencies	11	62	139	246	392	145	995
		Percentages	,6%	3,3%	7,4%	13,1%	20,8%	7,7%	52,8%
	ScienceDirect	Frequencies	0	0	0	194	440	254	888
		Percentages	0,0%	0,0%	0,0%	10,3%	23,4%	13,5%	47,2%
	Total	Frequencies	11	62	139	440	832	399	1883
		Percentages	,6%	3,3%	7,4%	23,4%	44,2%	21,2%	100,0%

Thematic Categorization

Seven major research orientations were identified through thematic analysis. The dominant theme was context-specific self-efficacy (37.5%), followed by technology integration (22.2%). Behavioral and emotional management and professional development accounted for 13% each. Less frequent themes included equity and inclusion (5%), systemic/organizational factors (4.8%), and student outcomes (4.4%). This distribution underscores the field's emphasis on localized efficacy beliefs over broader systemic outcomes (Table 2).

Focus on Primary Education and Teacher Self-Efficacy

Only 4% of articles explicitly addressed primary school settings. Meanwhile, teacher self-efficacy emerged as a central topic in 26.1% of the corpus. A modest positive correlation (r = 0.173, p < 0.01) suggests that studies focused on primary education were somewhat more likely to explore teacher self-efficacy directly.

Table 2

Distribution of articles on teacher self-efficacy across identified categories and scientific databases

		Categories							
		Behavioral and emotional management	*Context-specific self-efficacy*	*Equity and inclusion*	*Professional development*	*Student outcomes*	*Systemic and organizational*	*Technology integration*	*Total*
Springer	*Frequencies*	51	523	72	117	40	50	142	995
	Percentages	2,7%	27,8%	3,8%	6,2%	2,1%	2,7%	7,5%	52,8%
ScienceDirect	*Frequencies*	193	184	23	130	42	40	276	888
	Percentages	10,2%	9,8%	1,2%	6,9%	2,2%	2,1%	14,7%	47,2%
Total	*Frequencies*	244	707	95	247	82	90	418	1883
	Percentages	13,0%	37,5%	5,0%	13,1%	4,4%	4,8%	22,2%	100,0%

Temporal Shifts in Thematic Emphasis

A statistically significant negative correlation ($r = -0.210$, $p < 0.01$) between publication year and teacher self-efficacy focus indicates a decline in centrality of this construct over time. In 2020, 72.7% of articles centered on teacher self-efficacy, compared to only 17% in 2025, highlighting a substantial reorientation in scholarly priorities (Figure 1).

This decline represented a genuine shift away from teacher-centered efficacy research rather than mere integration of the concept into broader frameworks, suggesting fundamental reorientation of research priorities over the five-year period.

Figure 1

Distribution of articles mentioning issues of teachers' self-efficacy across time (Yes/ No)
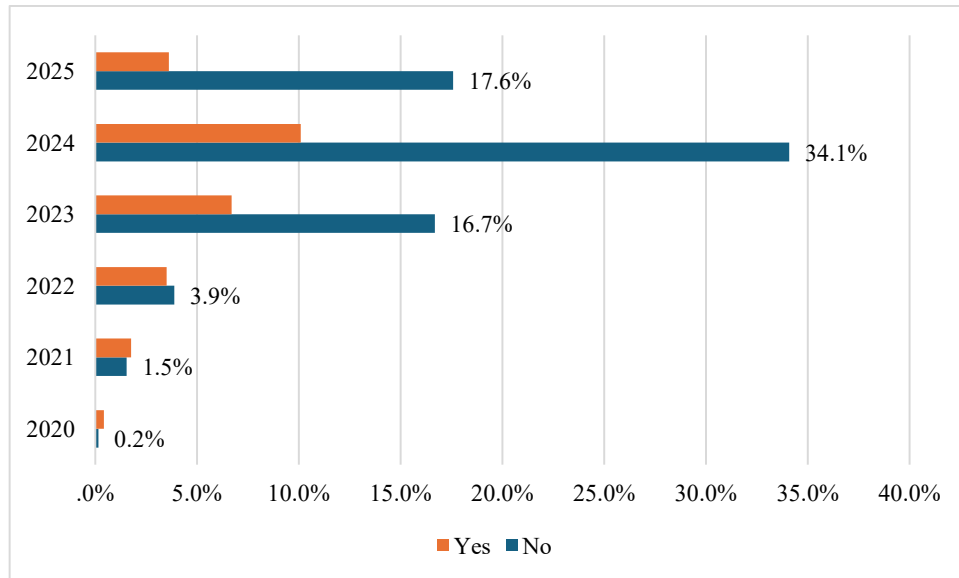
Database-Driven Divergence in Research Focus

Marked differences in thematic emphasis were evident between databases. Springer published a significantly higher proportion of articles focusing on teacher self-efficacy (47.7%), while ScienceDirect contributed only 1.8% of such publications. This divergence, supported by a strong negative correlation ($r = -0.522$, $p < 0.01$), likely reflects distinct editorial policies or disciplinary orientations of the platforms (Table 3).

Table 3

Distribution of articles discussing teachers' self-efficacy in Springer and ScienceDirect

			The article discusses teachers' self-efficacy		Total
			No	*Yes*	
Database	Springer	Frequencies	520	475	995
		Percentages	27,6%	25,2%	52,8%
	ScienceDirect	Frequencies	872	16	888
		Percentages	46,3%	,8%	47,2%
Total		Frequencies	1392	491	1883
		Percentages	73,9%	26,1%	100,0%

3.7 Thematic Evolution and Emerging Priorities

Over time, research has shifted from early emphases on behavioral and context-specific aspects toward themes such as technology integration, systemic change, and student outcomes. A weak but significant positive correlation between category and publication year ($r = 0.129$, $p < 0.01$) supports this thematic evolution. For example, 90.9% of 2020 publications addressed context-specific efficacy, while 29.8% of 2025 articles focused on technology integration (Table 4).

Table 4. Distribution of articles on teachers' self-efficacy across categories and years

			Behavioral and emotional management	Context-specific self-efficacy	Equity and inclusion	Professional development	Student outcomes	Systemic and organizational	Technology integration	Total
Year	2020	*Frequencies*	0	10	0	0	0	1	0	11
		Percentages	0,0%	,5%	0,0%	0,0%	0,0%	,1%	0,0%	,6%
	2021	*Frequencies*	1	40	3	6	1	2	9	62
		Percentages	,1%	2,1%	,2%	,3%	,1%	,1%	,5%	3,3%
	2022	*Frequencies*	4	88	8	16	4	3	16	139
		Percentages	,2%	4,7%	,4%	,8%	,2%	,2%	,8%	7,4%
	2023	*Frequencies*	56	182	24	51	19	14	94	440
		Percentages	3,0%	9,7%	1,3%	2,7%	1,0%	,7%	5,0%	23,4%
	2024	*Frequencies*	128	282	39	114	39	50	180	832
		Percentages	6,8%	15,0%	2,1%	6,1%	2,1%	2,7%	9,6%	44,2%
	2025	*Frequencies*	55	105	21	60	19	20	119	399
		Percentages	2,9%	5,6%	1,1%	3,2%	1,0%	1,1%	6,3%	21,2%
Total		*Frequencies*	244	707	95	247	82	90	418	1883
		Percentages	13,0%	37,5%	5,0%	13,1%	4,4%	4,8%	22,2%	100,0

ScienceDirect publications tended to exhibit greater thematic diversity, with 21.7% addressing behavioral/emotional management and 31.1% focusing on technology integration. Springer remained more concentrated, with 52.6% of its articles centered on context-specific efficacy. The correlation between database and thematic category ($r = 0.156$, $p < 0.01$) supports the existence of distinct thematic ecosystems within each platform.

Attention to Primary Education

Thematic analysis confirmed minimal attention to primary education across the corpus, with only 4% of studies addressing this setting. The correlation between databases and primary school focus was weakly negative (r = -0.059, p < 0.05), indicating minimal variation across platforms. However, studies that did address primary contexts showed a greater likelihood of examining teacher self-efficacy (r = 0.173, p < 0.01).

Correlational Insights and Field Trajectory

Among all statistical relationships, the negative correlation between publication year and teacher self-efficacy focus (r = -0.210) was one of the most notable, suggesting a tangible decline in explicit attention to this construct over time. In tandem, the positive correlation between category and year (r = 0.129) reflects a shift in research priorities toward higher-numbered thematic categories, such as systemic and technological concerns. Furthermore, the weak negative correlation between thematic category and teacher self-efficacy focus (r = -0.058, p < 0.05) implies that newer thematic directions are less likely to explore teacher efficacy explicitly.

Synthesis of Quantitative Trends

Overall, the bibliometric landscape depicts a field in transformation. Key developments include:
- A marked decline in explicit focus on teacher self-efficacy.
- The rising importance of technology integration and systemic perspectives.
- Increasing divergence between publishing platforms in thematic coverage.

These findings suggest a reorientation away from traditional teacher-centered efficacy models toward broader, application-oriented frameworks. This evolution will likely shape future theoretical models and practical interventions related to self-efficacy in education.

Figure 2 presents the correlation heatmap summarizing all significant inferential relationships identified in this analysis.

The negative correlation between publication year and teacher self-efficacy focus deserved particular attention as it represented one of the strongest statistical relationships in the dataset. This finding indicated that newer publications demonstrated statistically significant reduction in explicit attention to teacher self-efficacy compared to earlier works. Far from representing mere evolution or expansion of the construct, this trend showed actual diminishing research interest in teacher efficacy beliefs as a central focus of investigation.

Topical analysis further illuminated shifting research priorities. Category correlated weakly but positively with publication year (r = 0.129, p < 0.01), indicating gradual

movement toward higher-numbered categories in the classification scheme. This shift represented movement from behavioral-management and context-specific discussions (prevalent in earlier years) toward technology integration, systemic organizational factors, and student outcome orientations in more recent publications.

The correlation statistics further revealed that thematic category correlated negatively with teacher self-efficacy focus (r = -0.058, p < 0.05), suggesting that research themes (especially those gaining prominence in recent years) demonstrated lower likelihood of addressing teacher efficacy specifically. This aligned with the temporal pattern showing declining interest in teacher-centered perspectives over the study period.

The research landscape depicted through this analysis revealed a field undergoing substantial transformation. The most significant trends included marked decline in explicit focus on teacher self-efficacy, rising prominence of technology integration and systemic perspectives, and growing divergence between publication repositories in terms of thematic emphasis. These patterns collectively suggested fundamental reorientation of research priorities within educational self-efficacy literature, moving away from traditional teacher-centered conceptualizations toward alternative frameworks and applications of efficacy constructs. Figure 2 below illustrates the correlation heatmap of the research corpus.

Figure 2

 Correlation heatmap of all inferentially identified in the present bibliometric mapping
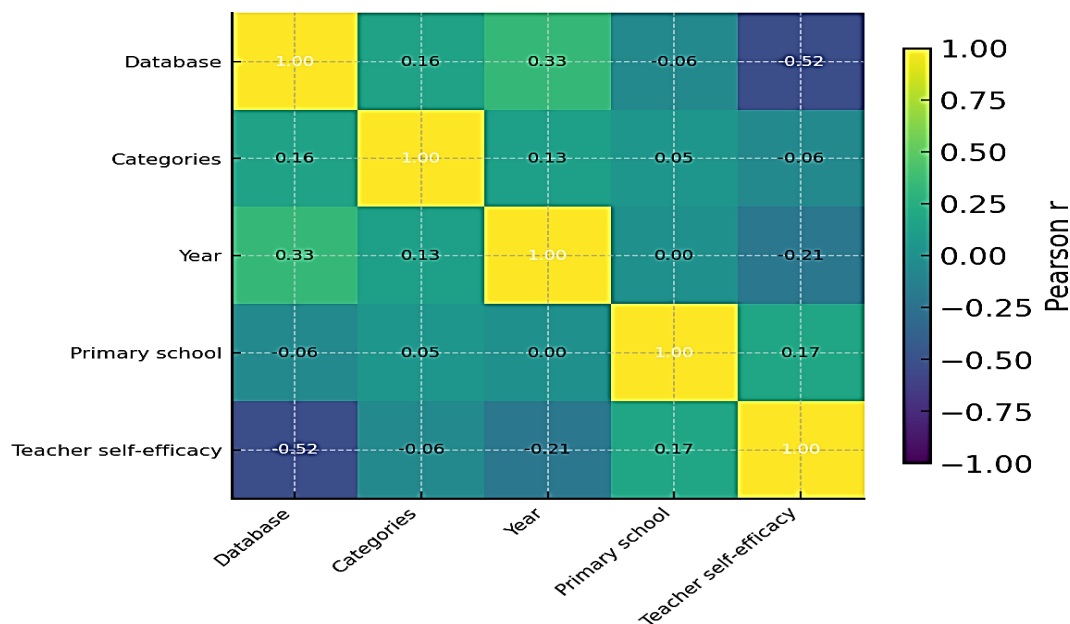
The statistically significant negative relationship between publication year and teacher self-efficacy focus constituted perhaps the most noteworthy finding of this analysis. This trend indicated genuine diminishment of research attention to teacher efficacy beliefs rather than mere expansion or evolution of the construct. As the field continues developing, these shifting priorities will likely influence both theoretical conceptualizations and practical applications of self-efficacy constructs within educational contexts.

Meanings of teachers' self-efficacy in primary schools

Of the total research corpus, only 3.02% (57 articles) analyzed issues on teachers' self-efficacy in primary schools (N=1883). In this particular context, teachers' self-efficacy is consistently framed as a self-referent belief or confidence about successfully carrying out teaching-related tasks. What differs is scope: either general instructional efficacy (belief in handling broad teaching duties (Pitkäniemi et al., 2024; Lee et al., 2023; Chan et al., 2023); domain-specific efficacy (confidence focused on particular content areas or practices: STEM, maths, writing, CS, wellbeing, etc.); contextual or relational efficacy (belief in coping with environmental demands such as post-pandemic challenges, burnout prevention, or Indigenous content) or process-oriented efficacy (confidence in promoting learner attributes -autonomy, agency, leadership- or in refining one's own pedagogy through reflection).

Pitkäniemi et al. (2024) treat teacher self-efficacy as an action-oriented belief about one's capability to plan learning, lead a group, and carry out pedagogical work in early-childhood settings; higher scores were directly associated with richer implementation of curriculum aims and stronger instructional leadership. Erol and Erol (2023) define STEM-related teacher self-efficacy as confidence in organizing, teaching, and assessing integrated STEM activities; they report that this belief mediates the link between constructivist orientation and favorable attitudes toward STEM, making it a pivotal psychological resource for early-years educators. Lee et al. (2023) frame self-efficacy as perceived capability to manage classrooms, engage pupils, and apply instructional strategies; their cross-lagged model shows that baseline self-efficacy predicts gains in all PERMA well-being domains one year later, whereas well-being seldom feeds back into efficacy, underscoring its antecedent role. Şenyiğit, Ç., and Bakirci (2025) conceptualize teacher self-efficacy for STEM practices as preservice teachers' confidence in designing, facilitating, and evaluating hands-on projects; regression results reveal that STEM awareness and perceived 21st-century skill competence jointly account for nearly half of the variance in these efficacy judgements.

Lim (2023) regards teacher self-efficacy as assurance in sustaining warm, well-structured teacher–child interaction; structural modelling demonstrates that stronger

efficacy predicts more supportive interactions, which in turn foster positive peer relations, with children's emotional intelligence moderating the second pathway.

Denee et al. (2023) look at visual-arts self-efficacy, defined as confidence in selecting media, guiding creative processes, and interpreting children's artworks; qualitative synthesis of three doctoral studies shows that past art experiences, practical engagement with materials, and prolonged professional learning lift this domain-specific efficacy, which then translates into richer visual-arts provision. Alsina et al. (2025) describe mathematics-teaching self-efficacy as certainty in posing modelling problems, scaffolding solutions, and evaluating reasoning; experimental data show that problem-posing interventions enhance modelling performance partially through elevated self-efficacy, highlighting its motivational function in inquiry-based mathematics. Zhou and Nanakida (2023) define teacher self-efficacy as belief in effectively performing daily professional tasks; survey analysis with 237 kindergarten teachers indicates that job satisfaction partially mediates the impact of personality traits on self-efficacy, while low pay satisfaction remains a constraint.

Scalise et al. (2024) treat efficacy as confidence in delivering early mathematics; video-based observations reveal that educators who felt more efficacious at the start of the year used a higher proportion of advanced numerical talk across the year, linking belief to enacted practice.

Corthorn et al. (2024) conceptualize self-efficacy as a psychological resource countering burnout; path modelling shows that mindfulness facets—especially observing—serve as conduits through which efficacy dampens emotional exhaustion and boosts quality of life. Espelage et al. (2023) defines efficacy as teachers' confidence in preventing and intervening in disability-related bullying; participants completing the DIAL professional-development programme reported higher efficacy in instructional strategies and greater willingness to address bullying behaviors. Leijen et al. (2023) see self-efficacy as perceived ability to enact effective pedagogy; cluster analysis of 161 Estonian teachers shows that groups with high efficacy and strong pedagogical knowledge deliver superior instructional quality, whereas over-confident but low-knowledge teachers perform less well, illustrating the nuanced interplay between cognition and motivation.

Hu et al. (2023) conceptualize efficacy across instructional strategies, classroom management, and student engagement; multilevel mediation indicates that classroom organization is the pivotal channel through which efficacy—especially for management—promotes children's social skills. Fenech and Watt (2022) interpret teacher self-efficacy as confidence derived from self, workplace, or regulatory supports; their mixed-methods study finds that registration regimes add little to efficacy unless coupled with collegial mentoring, whereas personal commitment remains the strongest driver.

Hughes and Fricker (2024) define efficacy in the context of teaching First Nations histories as confidence in selecting sources, facilitating truth-telling, and handling sensitive dialogue; reflective analysis of a decolonizing textbook project shows that shared leadership and publisher support broadened authors' efficacy to engage with Indigenous perspectives. Chan et al. (2023) focus on measurement, validating a new comprehensive self-efficacy scale that retains instructional, management, engagement, and creativity domains; confirmatory factor analysis with 854 preservice teachers yields good fit and strong convergent validity against general self-efficacy and teaching intention.

Berg et al. (2024) define mathematics-teaching self-efficacy as confidence in explaining concepts and orchestrating rich tasks; multilevel modelling with 327 New Zealand primary teachers shows that years of experience and frequent use of effective pedagogical practices both feed into higher efficacy, which in turn predicts greater enactment of those practices, forming a positive loop.

The research illuminates important mediational pathways where efficacy serves as the psychological mechanism translating training into practice and identifies cyclical relationships between belief and enactment that suggest developmental trajectories for enhancing both confidence and competence. This remarkably small proportion of studies specifically addressing teacher self-efficacy in primary settings aligns with the broader bibliometric finding of declining research attention to teacher-centered efficacy constructs, highlighting a significant gap in the literature despite the developmental importance of this educational stage.

Discussion and conclusions

This study employed a bibliometric approach focused on mapping trends in literature including publication counts, co-word clusters, and thematic shifts—rather than conducting a statistical meta-analysis of quantitative findings. Accordingly, the analysis provides insights into evolving research emphases and conceptual frameworks within teacher self-efficacy scholarship, but it does not estimate effect sizes or intervention impacts. As such, the analysis provides insights into how research emphases and conceptual frameworks are evolving in the teacher self-efficacy field, but it does not estimate effect sizes or intervention impacts. The findings document a field in significant transition, moving from teacher-centered conceptualizations toward broader systemic frameworks. The research patterns raise important questions about theoretical coherence and highlight considerable gaps in primary education contexts, suggesting the need for more integrative theoretical frameworks and targeted investigation of underrepresented educational settings.

Our findings document a field undergoing significant transition, moving away from traditional teacher-centered conceptualizations toward broader systemic and context-specific frameworks. This shift raises important questions about theoretical coherence and highlights notable gaps, particularly in primary education contexts, underscoring the need for more integrative theoretical frameworks and targeted investigations of underrepresented settings.

Specifically:

Objective 1 (Thematic Clusters)

We identified and categorized emerging and declining thematic clusters within the teacher self-efficacy literature, revealing a gradual waning of context-specific self-efficacy topics alongside the rise of technology integration and organizational themes. These trends suggest a diversification of conceptual foci but also indicate potential fragmentation.

Objective 2 (Temporal Shifts)

Quantitative analysis of keyword frequencies showed a statistically significant decline in explicit focus on teacher self-efficacy over the 2000–2025 period, suggesting evolving research priorities. However, this decline may reflect integration of efficacy concepts into broader educational themes rather than outright abandonment.

Objective 3 (Venue and Context Effects)

Analysis of publication venue and educational setting revealed differential emphases: SpringerLink maintained a stronger focus on teacher self-efficacy, while ScienceDirect publications exhibited broader thematic diversity. Moreover, primary education settings remain underrepresented, signaling an important area for future research.

Objective 4 (Underexplored Areas and Emerging Shifts)

We have also addressed limitations such as database coverage bias, search-term constraints, and coding subjectivity, which temper the generalizability of our conclusions. Finally, we propose directions for future research aimed at integrating disparate operationalizations of teacher self-efficacy, fostering cross-cultural and cross-venue syntheses, and bridging thematic divides within the field.

Discussion of self-efficacy concepts

Quantifying Temporal Shifts in Self- Efficacy Focus

We performed keyword searches for the terms "self-efficacy" and "self-efficacy" within titles and abstracts using Excel's text search functionality, supplemented by manual verification. For each publication year (2000–2025), we calculated both the absolute number of articles mentioning self-efficacy and the corresponding percentage relative to total publications that year. Pearson correlation analysis revealed a significant

negative trend (r = –0.210, p < .01), indicating a decline in the relative focus on self-efficacy over time. These findings are illustrated in the dual-axis line chart in Figure 1, which depicts both absolute article counts and proportional mentions, including confidence intervals where applicable.

Assessing venue and Context Effects

To evaluate potential differences by publication venue and research context, each article was tagged by source database (SpringerLink vs. ScienceDirect) and classified into "Primary context" (direct educational settings such as K–12 and higher education) or "non-primary context" (areas where education was not the primary focus, such as corporate training). Classification was based on metadata, titles, and abstracts, as part of the manual coding process. Comparative analyses and heatmap visualizations (see Figure 2) were used to highlight variations in thematic emphasis across databases and contexts.

This bibliometric analysis of the teacher self-efficacy literature reveals notable shifts in research emphasis between 2020 and 2025. The marked decline in the proportion of studies explicitly centering teacher self-efficacy suggests an evolving field that is increasingly oriented toward broader systemic, technological, and student-centered themes. Rather than indicating a conceptual rejection, this transition may reflect the integration of efficacy-related constructs into more applied or context-specific frameworks.

The data reveals distinct patterns across publication platforms. Springer has continued to publish a substantial share of research explicitly engaging with teacher self-efficacy, whereas ScienceDirect has contributed to a more thematically diverse body of work, particularly emphasizing behavioral management and technology integration. These differences may reflect varying editorial focuses and audience expectations, which in turn shape how knowledge is produced and disseminated within scholarly networks.

Thematic trends over time further underscore a pivot in scholarly interest. Context-specific self-efficacy, once a dominant topic, has seen a relative decline, while topics such as technology integration and organizational factors have grown in prominence. These developments appear to parallel broader educational shifts, including digital transformation and the rising influence of systemic factors in teaching environments.

A key gap identified through this bibliometric mapping is the limited attention paid to primary education. Despite its critical developmental role, only a small fraction of studies explicitly addressed this context. This underrepresentation may signal missed opportunities for examining how teacher efficacy operates in early educational settings where its impact may be uniquely influential.

This bibliometric analysis reveals a field in transition, with traditional teacher self-efficacy constructs losing centrality amid the rise of technology-driven, systemic, and context-specific research orientations. However, it remains unclear whether this

trajectory signals genuine theoretical evolution or premature marginalization of a construct that continues to offer analytical value—particularly in underrepresented contexts such as primary education.

Finally, the observed trends point to potential tensions within the field. While interest in teacher self-efficacy appears to be declining as a stand-alone focus, the concept remains embedded in many specialized domains. This raises important questions about the evolving conceptual coherence of self-efficacy research and suggests areas for future investigation, particularly in underexplored contexts such as primary education.

Our bibliometric analysis revealed several major trends in teacher self-efficacy research between 2000 and 2025, each with important implications and actionable recommendations.

Decline in Central Self-Efficacy Focus

The documented decline in studies explicitly centered on teacher self-efficacy suggests a shift away from traditional, teacher-centered conceptualizations toward broader systemic or applied frameworks. This trend calls for the development of **hybrid measurement instruments** that integrate core self-efficacy constructs with emerging thematic domains—such as technology use and organizational factors—to better capture the construct's evolving nature. Such tools would enable researchers to maintain continuity with foundational theory while addressing contemporary educational complexities.

Rise of Technology and Contextual Themes

The increasing prominence of technology integration and contextual factors in the literature reflects broader educational transformations. This shift highlights the need for **interdisciplinary research efforts** that combine expertise in efficacy theory with technological and organizational scholarships. Facilitating these collaborations can generate more comprehensive frameworks that account for how efficacy operates in digitally enriched, systemic teaching environments.

Venue Specialization and Thematic Fragmentation

Distinct publication patterns between SpringerLink and ScienceDirect, with Springer emphasizing traditional self-efficacy and ScienceDirect favoring diverse topics, reveal a fragmentation of the field along venue lines. Addressing this requires cross-venue collaborations and syntheses to bridge thematic silos and promote conceptual coherence. Initiatives such as joint special issues, cross-database meta-analyses, and integrative reviews could foster dialogue and knowledge integration across scholarly communities.

Underrepresentation of Primary Education Contexts

Our analysis identified a significant gap in research focusing on primary education settings, despite their critical developmental importance. We strongly advocate for **targeted empirical investigations** within primary education to explore how teacher self-efficacy operates in these foundational contexts. Such studies would address a pressing gap and provide evidence to inform policy and practice tailored to early educational stages.

Together, these calls to action provide a roadmap for advancing teacher self-efficacy research in ways that are theoretically robust, contextually relevant, and methodologically innovative.

Limitations of the current endeavor
1. **Coverage Bias** – The study was restricted to two major databases (Springer and ScienceDirect), which may not fully represent the breadth of teacher self-efficacy literature available across other repositories such as ERIC, Scopus, or Web of Science. This limits the generalizability of our results and may skew thematic or temporal patterns.
2. **Temporal Indexing Discrepancies** – Differences in how databases index publications over time could introduce inconsistencies in year-by-year publication counts, particularly in more recent years where indexing delays are common. This temporal lag may affect trend analyses and the interpretation of emerging or declining topics.
3. **Publication Type Bias** – Our inclusion criteria focused on peer-reviewed journal articles, potentially excluding other relevant formats (e.g., conference proceedings, book chapters, or grey literature), which may contain valuable insights, especially in emerging areas.
4. **Search-Term Limitations** – Although we employed carefully selected search terms, it is possible that some relevant studies using alternative conceptual labels or related constructs (e.g., "teacher confidence" or "educator beliefs") were missed.
5. **Manual Coding Subjectivity** – Thematic categorization necessarily involved interpretive judgments by coders, which introduces the potential for bias despite rigorous training and high inter-rater reliability (Krippendorff's α = .951). Such subjectivity may influence classification and subsequent analyses.
6. **Construct Ambiguity** – Teacher self-efficacy remains a complex, variably defined construct across the literature. Differences in conceptualization and operationalization across studies may have influenced our classification scheme and the interpretation of thematic clusters.

7. **Metadata Quality and Completeness**
   The bibliometric analysis relies heavily on metadata accuracy (titles, abstracts, keywords). Incomplete or inconsistent metadata entries can affect keyword extraction, co-word analysis, and thematic clustering, potentially biasing results.

8. **Clustering Parameter Sensitivity**
   The identification of thematic clusters via co-word analysis depends on parameters set within the clustering algorithm (e.g., resolution, threshold values). Different parameter choices might yield varying cluster structures, affecting the robustness of thematic interpretations.

9. **Time-Lag Distortions**
   Recent publications may be underrepresented due to delays in indexing or publication, potentially skewing temporal trend analyses and underestimating emerging thematic areas.

While traditional teacher self-efficacy constructs have clearly declined in scholarly prominence, it remains uncertain whether this shift reflects a meaningful theoretical progression or a premature retreat from a construct still rich with explanatory potential. The field has yet to determine whether teacher self-efficacy frameworks can retain conceptual relevance within an increasingly fragmented and application-driven research landscape. This uncertainty is particularly salient in domains such as primary education, where the psychological resources of educators may play a uniquely formative role but remain under-investigated.

To address the gaps identified in Objectives O1–O4, future research must pursue a coordinated agenda that includes:

(1) **integrative measurement studies** to reconcile disparate operationalizations of teacher self-efficacy across evolving thematic domains;

(2) **cross-cultural analyses** to test the transferability of self-efficacy constructs across diverse educational systems and socio-political contexts;

(3) **venue-agnostic syntheses** that move beyond the constraints of specific publication platforms to develop a more holistic understanding of research trends and conceptual continuities.

(4) Emerging research highlights the role of emotional, cultural, and collective influences on teacher efficacy, pointing to a shift toward more holistic and dynamic frameworks. However, several areas remain underexplored, particularly the influence of sociopolitical contexts, the integration of digital pedagogies.

This explains why we encourage collaboration between research communities traditionally focused on technological integration and those rooted in efficacy theory, to foster conceptual bridges and mitigate the thematic fragmentation observed in this study's bibliometric mapping. Such interdisciplinary dialogue is essential if the field is to

determine whether teacher self-efficacy remains a viable unifying construct or should evolve into new formulations attuned to the demands of contemporary education.

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The role of humanism in medical practice and medical education - A narrative review and bibliometric analysis

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Abstract

In a context marked by clinical complexity and systemic pressures, the integration of the humanities into medical professional education is becoming increasingly relevant. This paper explores, through a narrative review and a bibliometric analysis of the literature (2000-2025, PubMed), the contributions of the humanities to medical education, clinical practice and public health. Findings reveal thematic recurrence around five major areas: narrative medicine and empathy, ethical and moral reasoning, cultural competence, clinical communication and professional well-being. Results show that students' exposure to literature, philosophy, arts and social sciences significantly improves empathy, critical reflection, emotional resilience and understanding of the patient experience. The bibliometric analysis also confirmed the coherence and interdependence of these themes, highlighting an emerging core of interdisciplinary interdisciplinary research between narrative medicine, clinical ethics and global health. Key recommendations include: the systematic introduction of humanities courses in the medical curriculum, the development of integrated thematic modules throughout clinical training, institutional support for continuing reflective education, and the encouragement of collaboration between medical and humanities disciplines. In conclusion, the humanities provide an essential underpinning for the preparation of competent, empathic and competent medical professionals adapted to contemporary challenges. An integrative educational approach, centred on the human dimensions of practice, is fundamental for a more ethical, equitable and sustainable health system.

Keywords: humanities, empathy, narrative medicine, burnout, holistic care, professionalism, medical education, interdisciplinarity, patient-centred care.

Introduction

Humanism plays an essential role in medical practice and medical education by promoting a holistic approach to health care that emphasizes empathy, ethical considerations, and understanding patients as individuals with unique experiences and environments. Integrating humanistic principles into the medical curriculum can

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improve the quality of patient care and enhances the doctor-patient relationship, which is crucial in today's healthcare environment.

Humanism in medicine is a conceptual paradigm that privileges the relational, ethical and cultural dimension of care, in opposition (but also complementary) to purely biomedical approaches. Underpinning this model is the idea that human health and suffering cannot be fully understood and treated without taking into account the subjective experience, social context and personal meanings of the patient(Rita Charon, 2006). This theoretical framework is supported by the theory of narrative medicine, which proposes that the medical act should be based not only on the interpretation of symptoms, but also on active listening and understanding of the patient's story, seen as a complex, biographical and not only biological being (R. Charon, 2001; Greenhalgh, 1999).

In educational terms, the humanistic approach is based on the model of reflective pedagogy and trans-disciplinary education, according to which professional training should not only target technical skills, but also critical thinking, emotional intelligence, ethical awareness and cultural competence (Shapiro et al., 2009). These components are essential for the development of a reflective professional, able to manage uncertainty, complexity and moral dilemmas in clinical practice.

Another relevant theoretical source is medical sociology, which explains how health and illness are influenced by structural factors such as socioeconomic status, education, gender, race and access to services(Cockerham, 2017). From this perspective, humanistic practice implies an active awareness of the social determinants of health and a social responsibility of the physician to support equity in care and health policy.

The integration of humanities (literature, ethics, philosophy, arts) in medical education is supported by the integrative medicine model, which promotes the connection between science and humanity. These disciplines provide cognitive and affective tools for the development of empathy, introspection and moral discernment(Kumagai & Wear, 2014). In this context, concepts such as professional compassion (Sinclair et al., 2017) and moral intelligence become central axes of medical education.

More recently, theories of student-centred learning and transformational education support the idea that learning experiences should generate not only the accumulation of knowledge, but also changes in attitudes, values, and perspectives - goals perfectly aligned with the integration of humanism in the training of physicians (Mezirow, 2000; Frenk et al., 2010).

Overall, the theoretical framework underpinning this article brings together narrative, ethico-philosophical, socio-medical and educational perspectives to demonstrate that humanism is not a decorative addition to modern medicine, but an

essential component for the training of competent, ethical and empathic professionals capable of practicing medicine adapted to the complexity of patients' real lives.

A significant aspect of humanism in medical education is the incorporation of the humanities, which include disciplines such as literature, sociology, philosophy and ethics. This interdisciplinary approach has been advocated as a means of cultivating empathy and critical thinking among medical students. Research indicates that programs that focus on narrative medicine and arts-based therapies can significantly enhance the empathic engagement of medical professionals, particularly in areas such as palliative care (Ong et. al, 2024; Wangding et al., 2024). Such initiatives not only enhance students' emotional intelligence, but also prepare them to manage the nuanced realities of patient interactions (Lee et al., 2024; Yang et al., 2024).

The emphasis on human rights and social justice in medical education has been emphasized as essential for the development of compassionate healthcare providers. Curricula that incorporate discussions of human rights and mental health have been shown to positively influence medical students' attitudes toward vulnerable populations (Agudelo-Hernández et al., 2024; Dhara & Fraser, 2024). This focus on social support is essential in addressing systemic inequities in health care, as it encourages future physicians to consider the broader social determinants of health that affect patients (Razack et al., 2024; Voeller & Pohl, 2024).

The role of humanism extends beyond education to clinical practice, where it is essential for promoting a patient-centred approach. Studies have shown that when health care providers engage with patients as whole people, rather than just cases, it leads to improved care outcomes and higher patient satisfaction (Szczepek, et al., 2024). This shift towards more humanistic practice is increasingly recognized as necessary to combat the dehumanization often seen in modern medical settings, where the emphasis on technical competence can overshadow the importance of compassionate and individualized care (Zhang & Liu, 2024; Lee et al., 2024).

The integration of humanities into medical education has been linked to addressing issues such as burnout among health professionals. By promoting a deeper connection with the human aspects of medicine, such programs can help alleviate the feelings of alienation and disillusionment that often accompany clinical practice (Zhai et al., 2024; Jayasinghe, 2024). Cultivating a supportive and empathic healthcare environment not only benefits patients, but also contributes to the well-being of healthcare providers themselves.

Narrative reviews contribute significantly to the study of humanism in medicine by synthesizing research on narrative competence, educational interventions and the emotional dimensions of medical practice. They provide an integrative framework for understanding how storytelling and narrative techniques can enhance professional

training and patient care, promoting humanistic values in medical education. Narrative workshops, for example, have demonstrated effectiveness in developing empathy and critical reflection among medical students (Pattanaik et al., 2024; Jerjes, 2024). Programs focused on narrative competence are associated with better clinical outcomes and a more humane approach to healthcare (Qimeng et al., 2024; Tsevat et al., 2024).

Bibliometric analysis supports this by identifying emerging themes, influential authors, and the growing recognition of the humanities in medical practice. Recent studies confirm the link between humanities training and the development of empathy and effective communication in the doctor-patient relationship (Drie, 2024; Clark, 2024). Interdisciplinary works, such as Yogesh Kashikar's (2024), analysis of John Keats' poetry, highlight the value of literature in cultivating compassion and deep understanding in medicine.

In this context, the software VOSviewer (Van Eck & Waltman) becomes an essential tool for visualizing bibliometric networks, facilitating the analysis of co-authorship, citation networks, and thematic co-occurrence (Virani & Rautela, 2024; Yu et al., 2024; Peng et al., 2024). Its graphical capabilities allow identification of critical connections in the literature, clarifying research structure and future directions (Aksoy, 2024; Geng et al., 2024; Ahiase et al., 2024; Widianto et al., 2024).

Objectives

The primary objective was to examine the concept of humanism in relation to medical practice and education; secondarily, we sought to identify the components with significant impact on patient-centred care and how the humanities should be included in the training of medical professionals. The ultimate aim of the narrative review was to obtain a comprehensive perspective on the importance of humanities in medicine. The bibliometric analysis, used as an independent method, was intended to confirm the findings based on the qualitative analysis and to outline as clear a picture as possible of the field under investigation.

Materials and methods

This paper uses a narrative synthesis of the scientific literature to analyse the integration of humanism and narrative medicine in medical professional training. The synthesis was structured thematically along the following axes: humanistic educational interventions, effects on empathy and medical professionalism, and the role of bibliometric analysis in evaluating this emerging field.

Database and rationale of choice. The PubMed database was exclusively used to identify relevant studies, given: its rigorous, biomedical and interdisciplinary nature; its

indexing of prestigious journals and peer-reviewed articles; its focus on areas such as medical education, public health, bioethics and applied medical humanities. This choice ensured consistency of sources and direct relevance to the proposed theme. Articles published between January 2000 and January 2025 were included to capture both the initial conceptual developments of narrative medicine and recent applications and consolidations - particularly those influenced by the COVID-19 pandemic and digital developments.

Inclusion and exclusion criteria. Inclusion: articles in English, with full text available; published in scientific journals with an impact factor or with recognition in the academic community; addressing: narrative medicine, medical humanism, medical humanistic education, empathy, professionalism, bibliometric analysis in the medical field; types of papers: original studies, systematic or narrative reviews, qualitative or mixed research. Exclusion: editorials without analytical content; clinical studies without humanistic or narrative component; papers in languages other than English; articles without full access to content.

Selection and evaluation process. Articles were initially selected based on title and abstract, followed by a full reading to assess theoretical and methodological relevance. Only papers explicitly addressing the impact or integration of the humanities in medical education and practice were retained. The quality of sources was assessed according to: journal status (impact factor, indexing); article typology (rigorous reviews, validated research); thematic relevance and contribution to the field. A total of 112 articles were selected, 55 of which were published in the last 10 years. Of all these articles, a total of 28 were reviews (systematic, narrative or scoping). The bibliometric data from the set of scientific papers were extracted into a specific PubMed file and entered for analysis in the VOSviwer version 1.6.20 programme. The network image of concepts and terms was analysed separately.

Structuring the narrative synthesis. The synthesis was organized thematically, according to an inductive logic, around the following dimensions: the formation of empathy and reflection through narrative interventions - e.g. DasGupta & Charon (2004) and Shapiro & Rucker (2003); the role of bibliometric analyses in mapping contributions in the field - e.g. Smydra et al. (2022) and Coronado-Vázquez et al. (2023); developing medical professionalism through humanities education - e.g. Doukas et al. (2012) and Petrou et al. (2021).

This approach allowed a complex and contextualized understanding of how narrative medicine contributes to the formation of a more humane and patient-conscious medical practice.

Results and discussion

1.   The role of humanities integration in contemporary medical practice

The integration of the humanities - such as literature, philosophy, the arts or medical sociology - is increasingly recognized as the foundation for a holistic medical practice. In the context of the complexity of human health, which involves not only biological dimensions, but also psychological, social and cultural aspects, these disciplines bring an essential added value to the understanding and care of the patient. The organization of the review along the axes presented has followed a logical approach of argumentation and the themes covered in the sections (e.g. empathy, critical thinking, professional ethics) prove to be a constant presence, influencing medical education and professional practice from many perspectives.

One of the central benefits is improved clinical communication: training in narrative medicine fosters a deep relationship with patients' experiences, allowing for personalization of interventions and increased quality of care (Drie, 2024; Cerceo, 2023). At the same time, the humanities provide a framework for dealing with uncertainties and ethical dilemmas in medical practice. Studies from anthropology and medical ethics develop the ability of future physicians to critically and empathically reflect on clinical decisions, contributing to principled care (Ofri, 2017; Chrousos et al. 2019). The importance of these components is also highlighted in promoting the emotional well-being of physicians. Contact with literature, art or reflective writing helps prevent burnout and cultivates professional resilience (Ofri, 2017; Cerceo, 2023). Another major contributor is cultural competence training - vital in a globalized medical system. Courses that address cultural differences and social justice prepare students to provide equitable and context-sensitive patient care (Cerceo, 2023; Thacker et al., 2021).

The humanities also encourage ethical reasoning and the development of moral courage needed to support patients in challenging contexts (Chrousos et al., 2019). Through the art of storytelling and reflection on suffering, students gain a better understanding of the lived experience of illness, which strengthens empathy and trust in the doctor-patient relationship (Drie, 2024; Cerceo, 2023; Thacker et al., 2021). This integration aligns with new trends in medical education, which emphasize interdisciplinary and patient-centred approaches in line with the ethical and social requirements of the profession (Thacker et al., 2021). The narrative review indicates that the humanities are not a decorative addition, but an essential component of professional training. They provide tools for communication, reflection, resilience, and equity - essential attributes for physicians practicing in an increasingly complex and human-centred world. Integration of the humanities into medical practice is increasingly recognized as essential to promote a more holistic approach to healthcare. This need

stems from the complex nature of human health, which encompasses not only biological factors but also psychological, social and cultural dimensions. The humanities, which encompass disciplines such as literature, philosophy and the arts, offer critical perspectives that enhance the practice of medicine by promoting empathy, ethical reflection and effective communication between healthcare providers and patients. Uncovering the social dimensions of disease and integrating other aspects of patients' social lives is the focus of a subspecialty, medical sociology.

As well as promoting communication and cultural competence, the humanities encourage critical thinking and ethical reasoning. Medical practice often involves making difficult decisions that require careful consideration of ethical principles and the potential impact on patients' lives. The humanities provide a rich context for exploring these ethical dilemmas, allowing medical students to engage with philosophical texts and case studies that challenge their assumptions and beliefs (Chrousos et al., 2019). This reflective practice is essential for developing the moral courage needed to advocate for patients and to navigate the complex world of modern healthcare in which the professional is faced with management and moral vulnerability.

From a personal perspective, I believe that integrating the humanities into medical practice is no longer an intellectual luxury, but a practical and ethical necessity. Modern medicine, despite impressive technological advances, is sometimes in danger of losing the very humanity that should underpin it. Each patient is more than a diagnosis - he or she is a person with a story, with suffering that cannot be quantified in biological parameters alone. For me, the strongest argument in favour of the humanities is their ability to make clinicians more empathetic and more aware of the complexity of the clinical relationship. Literature, philosophy, art - they all open windows to understanding otherness and developing deep listening. It is disturbing to realize that sometimes a simple act of authentic presence and attentive listening can have a greater therapeutic impact than a flawless technical intervention. At the same time, I believe that the benefits are not one-sided. It is not only the patient who gains from this approach, but also the practitioner, who has the opportunity to preserve his inner balance, the meaning of his work and the joy of practicing. I have often felt the tendency in medical circles to turn medicine into a succession of standardized procedures. In this context, humanism functions as a breathing space and a space for reflection, an antidote to burnout and professional dehumanization. Moreover, the humanistic approach also brings to the fore a social responsibility of the medical profession. In a world marked by inequality, discrimination and inequitable access to care, a deep understanding of the patient's cultural, economic and emotional context is a prerequisite for justice and ethics. Medical sociology, for example, provides highly relevant reading grids for understanding the reality behind symptoms. In short, I am convinced that medicine cannot remain a complete science if it

ignores its humanistic, reflective and moral side. And medical education has a responsibility to train not only competent clinicians, but people capable of accompanying other human beings in the fragility of suffering. The integration of the humanities is not just an aesthetic addition to the curriculum, but a foundation for truly healing medical practice.

2. The rationale for a return to humanism in medicine

The return to humanism in medicine reflects recognition of the limitations of the purely biomedical model, which often ignores the emotional, social and ethical aspects of patient care. The integration of the humanities (literature, philosophy, arts) offers a more empathic and reflective approach, indispensable in an increasingly technological and depersonalized medical system (Oyebode, 2009; Özçakir & Bilgel, 2018). This reorientation is based on the need to understand patients as complex beings with unique stories. Studies show that humanistic training develops empathy and compassion - essential skills for doctor-patient relationships (Kekeghe, 2021; Anderson & Schiedermayer, 2003).

At the same time, the humanities support the formation of critical thinking and ethical reasoning, preparing students to respond to moral dilemmas and advocate for patient's well-being in a responsible manner (Jakušovaitė & Blaževičienė, 2007; Shapiro et al., 2009; Doukas et al., 2010). Effective communication skills are another major benefit. Studies show that humanistic training enhances expression and active listening, fundamental in patient-centred care (Wang, 2011; Gull, 2005; DasGupta, 2007). The shift towards humanism is also supported by changes in society: patients increasingly seek empathy, understanding and treatments offered with respect (Fairchild, 2020; Ataya at al., 2022). Thus, medicine is reaffirmed not just as a science, but as a deeply human endeavour (Knight, 2006). In addition, technological advances have facilitated the integration of the humanities through innovative, interactive and digital teaching methods relevant to current generations of students (Kemp & Day, 2014; Dennhardt et al., 2016). Narrative revision leads to the idea that the return to humanism is driven by the need for more personal, ethical care that is more connected to the lived experience of the patient. This shift provides the framework for training physicians capable of meeting today's demands with integrity and compassion.

The return to humanism in medicine is influenced by a wider societal shift towards valuing compassion and empathy in healthcare. As patients increasingly seek not only treatment but also understanding and support, the demand for healthcare providers who can offer a humane approach has increased (Fairchild, 2020). This societal expectation aligns with the tenets of medical humanism, which emphasizes the importance of treating patients with dignity and respect (Ataya et al., 2022). The humanistic sciences serve as a vital resource in cultivating these values, reinforcing the idea that medicine is not just a

technical profession, but a deeply human endeavour (Knight, 2006). The integration of the humanities into medical education has been facilitated by technological advances that enable innovative teaching methods. Digital platforms and technology-enhanced learning environments have made it easier to incorporate humanities-based resources into the medical curriculum (Kemp & Day, 2014). This adaptability is crucial for engaging a new generation of medical students who are accustomed to interactive and multimedia learning experiences. By harnessing technology, educators can create engaging learning experiences that emphasize the relevance of the humanities in understanding the complexities of medical practice (Dennhardt et al., 2016).

From my perspective, what we today call the return of humanism in medicine is not just an educational trend or a theoretical current, but a cry for rebalancing in the face of a medicine that was at one point in danger of becoming overly technical and dehumanized. I felt this rupture in multiple contexts - in dry medical interactions, in hospitals dominated by metrics and protocols, where the patient's story often became a collateral detail. It seems particularly relevant to me that this reorientation towards humanism has not only come "from above" - from educators or philosophers of medicine - but also from the patients themselves, who increasingly demand not just effective treatments, but genuine relationships and deep understanding. In an era of personalized medicine, it is ironic but also encouraging that it is precisely the human dimension - empathy, listening, context - that is becoming the new standard of excellence. I believe, from personal experience and observations in the medical field, that the humanities offer the physician something that no software or algorithm can replace: the ability to feel, interpret and respond nuanced to suffering. This is not learned through clinical guidelines, but through contact with human stories - from literature, art or real life. The study of ethics, for example, not only engages critical thinking, but also forces us to take a deep moral responsibility towards the patient. Another aspect that I consider essential is the impact of humanism on clinical communication. In an increasingly rushed medical system, the ability to communicate clearly, but also with empathy, can make the difference between a patient being listened to and one lost in the numbers. Personally, I have found that genuine empathy - not mimicry - is formed through the exercise of introspection and by cultivating a sense of otherness, which the humanities really foster. I am glad to see that, through technology, these values can be transmitted more effectively to new generations. The resurgence of humanism, accompanied by pedagogical innovation, makes it possible to train a modern but deeply human doctor, able to manage ethical dilemmas, respect diversity and maintain a living connection with the patient - as a person, not just as a clinical case. I believe that this revival of humanism in medicine is not a nostalgic return to the past, but a necessary evolution - a moral and emotional adaptation to the complexity of today's world. Tomorrow's medicine will need doctors

who think technologically but feel deeply. And this balance cannot be achieved without a sincere return to humanity.

3. Humanities elements revalued in medical student training

Modern medical training urgently needs a humanistic approach to support the development of empathy, critical thinking and effective communication. The integration of humanities (literature, philosophy, arts, sociology) provides students with essential frameworks for a holistic understanding of the patient. A central element is narrative medicine, which values the patient's story in the therapeutic process. Through exposure to personal narratives and literature, students develop their ability to empathize and understand the complexity of the illness experience (Tseng et al., 2016; Coronado-Vázquez et al., 2023). Critical thinking and ethical reasoning, supported by courses in medical philosophy and ethics, enable future physicians to approach moral dilemmas and complex clinical decisions with responsibility and professionalism (Hartanti et al., 2019; Carrese et al., 2015).

The visual arts and creative expression contribute to the development of clinical observation and emotional intelligence, while providing space for reflection and professional stress management (Haidet et al., 2016; Meacham et al., 2022). The humanities also support cultural competence, indispensable in the globalized context of medicine. Understanding the social and cultural context of the patient helps to provide equitable and respectful care (Coronado-Vázquez et al., 2023; L. Chen et al., 2023). Empathetic communication is another major benefit: reflective dialog and active listening are essential tools for building trust and patient satisfaction (Rabow et al., 2010; Howick et al., 2021). Last but not least, exposure to the humanities contributes to reducing burnout, supporting the emotional well-being and resilience of students and professionals (Quinlan, 2021; Kemp & Day, 2014). Overall, humanistic elements such as narrative, ethics, art, culture and communication need to be strengthened in the medical curriculum to train professionals who are able to respond humanely and effectively to the complex needs of patients.

Moreover, the humanities can play a vital role in promoting cultural competence among medical students. An understanding of the social determinants of health and the cultural contexts in which patients live is essential for the provision of equitable care. Courses that explore topics such as medical anthropology and sociology can help students appreciate the diverse backgrounds of their patients and the impact of culture on health behaviours (Coronado-Vázquez et al., 2023). This cultural awareness is crucial for addressing health disparities and ensuring that care is respectful and responsive to patients' values and beliefs (L. Chen et al., 2023).

In my opinion, the training of future physicians must keep pace with the human complexity of the patient - not just with technological advances. That is why

reintroducing elements from the humanities into medical education is not only useful, but profoundly necessary. We are not talking about a decorative addition to a clinical curriculum, but about a reconfiguration of the vision of the medical act. I have noticed, in interactions with students and professionals, how often there is a sense that medicine is becoming a technical routine, where the human is left at the door. But when medicine is completely divorced from the patient's story, it risks losing its vocation. In this context, the power of narrative seems to me to be one of the most precious tools of the future doctor. Listening carefully to the patient's story not only improves the diagnosis, but creates a therapeutic alliance based on trust and meaning. Another point I consider vital is the cultivation of critical thinking and applied ethics. Medicine is rarely black and white. More often than not, it unfolds in shades of grey - dilemmas, uncertainties, limits. What makes the difference at these times is not pure science, but well-formed moral judgment. Learning to think ethically, to confront difficult questions and not run away from ambiguity, is an essential feature of professional maturity. Integrating the arts and creative expression into medical training - although sometimes viewed with scepticism - offers a profoundly humanizing dimension. Careful observation of a work of art or interpretation of a literary text can bring about that keen, detail-oriented eye that is essential in clinical practice. Moreover, it encourages introspection and emotional regulation, crucial factors in preventing burnout. I am also impressed by the perspective of social sciences in shaping cultural competence. Globalized medicine forces us to understand human diversity - not just as difference in symptoms, but as difference in meaning. Sociology, medical anthropology, studies of health inequalities - all contribute to the training of physicians capable of practicing fair, sensitive and equitable care. And perhaps most importantly: the humanities can teach us how to remain whole as humans in the face of constant suffering. Herein lies one of their greatest gifts - the ability to sustain emotional resilience and the joy of practicing medicine in an authentic way. A medical education that revalue the narrative, ethical, cultural and artistic dimensions not only produces better clinicians, but also more whole people. And this balance between science and humanity is the key to sustainable and meaningful medical practice.

4. Integrating humanistic components into medical training stages

The gradual integration of the humanities into medical training is essential for the cultivation of empathic, ethical and effective professionals who are able to respond to both the technical and human dimensions of patient care.

a. Preclinical education. In the early years of study, courses in literature, philosophy and social sciences can stimulate critical thinking, empathy and ethical sensitivity. Early exposure to humanistic values fosters pro-social and patient-centred attitudes (Kemp & Day, 2014; Acharya et al., 2020).

b. Early medical education. In the preclinical phase, humanistic components can accompany biomedical sciences through reflective writing, narrative communication, and applied ethics, contributing to the development of the capacity for authentic connection with patients (Houston, 2018; Tseng et al., 2016).

c. Clinical preparation. During practicum training, the application of humanistic principles in dealing with patients strengthens empathy, communication, and ethical decision-making. Interprofessional programs and direct contact with patients' narratives support the integration of humanistic competencies in the real-life context of care (Wang, 2011; Taylor, Lehmann, & Chisolm, 2018).

d. Continuing medical education. Humanistic learning should continue after graduation, through workshops and continuous professional reflection, helping to combat burnout and maintain patient-centred practice (Dennhardt et al., 2016; Özçakir & Bilgel, 2018).

e. Institutional commitment. A sustainable curriculum requires clear institutional support: investment in humanities courses, inter-disciplinary collaborations, and firm integration of these values into educational goals. Observed benefits include enhanced empathy, improved communication, and professional resilience (Lyon et al., 2013; Kekeghe, 2021).

The integration of humanism throughout the entire educational journey - from the beginning of studies to professional life - supports the development of competent, empathic physicians who are attuned to the social and emotional complexities of modern care.

Looking at this staged structuring of the integration of humanism in contemporary medicine, it seems essential to emphasize that the timing is not singular, but that each educational stage offers a unique opportunity for the formation of a mature relationship between the physician and the human dimension of care. In the early years - in the preclinical stage - I believe it is crucial that future physicians learn to see the patient beyond anatomy and physiology. Here, the introduction of literature, philosophy or ethics courses can sow not only empathy, but also curiosity for human complexity. In my experience, a student exposed early to these perspectives tends to be more open, balanced, and thoughtful in later interactions with patients. When it comes to the first two years of medicine, the so-called early medical education phase, the humanistic component becomes more practical. Not only critical thinking, but also the sense of language and silence, the ability to communicate without judgment - these are skills that are formed slowly, through guided reflection. I think these skills should be formed as systematically as clinical skills, not left to chance. The clinical training part is, in my opinion, a turning point. This is where the difference is made between theoretical knowledge of compassion and its concrete manifestation in a hospital ward. This is where

one really feels whether narrative medicine or ethical reflection has taken root. From this perspective, connecting the humanistic components with daily practice is essential. Otherwise, only nice but sterile ideals remain. With regard to continuing medical education, I sincerely believe that humanism is not "taught" once, but it is nurtured, it is cultivated. Practitioners need spaces for reflection, not just clinical updates. Ethics workshops, supervision groups, narrative medicine in continuing education - all of these can become a form of emotional professional hygiene, absolutely necessary in a system marked by overwork and burnout. And without real institutional commitment, all these initiatives risk remaining insular. We have seen promising programs fail precisely because they were not supported by a coherent curricular vision or academic leadership. What is needed is investment, pedagogical courage and cross-disciplinary collaboration, otherwise humanism will remain just a neat concept in faculty brochures. Mainstreaming humanities is not a one-off intervention, but a red thread that must run through all medical training. This is the only way to train professionals who are both sure-handed and warm-hearted. And this rare and precious balance is what makes medicine not only a science but also a human art.

5. The humanities' response to future public health challenges

The humanities provide an essential framework for addressing the increasingly complex challenges of public health, helping to understand the social, cultural and ethical dimensions of health and to develop effective, equitable and sustainable interventions.

a. Social determinants of health. Through sociology and anthropology, the humanities facilitate understanding of the impact of social factors (such as poverty, education or cultural norms) on health. This type of analysis supports more equitable public policies and interventions tailored to the real needs of populations (Azari & Lomazzi, 2023).

b. Communication and public engagement. Narrative techniques offered by the humanities improve health communication, essential in crises such as the COVID-19 pandemic. Adapting messages to cultural and linguistic diversity, also supported by AI tools, can increase trust and adherence to health advice (Saffran, 2014; Turner et al., 2014).

c. Ethics and human rights. Integrating human rights principles into public health supports equitable, legitimate and transparent interventions, especially in critical contexts such as pandemic constraints. Ethical foundations strengthen accountability and support for vulnerable populations (Gostin et al., 2020).

d. Interdisciplinary collaboration. Humanism favours dialog between fields - medicine, ethics, culture - in support of integrated solutions. Examples such as the "One Health" model demonstrate the value of humanistic perspectives in tackling complex problems such as zoonotic diseases or the climate crisis (Ryu et al., 2017).

e**. Training public health leaders**. Integrating humanism into the training of specialists develops essential skills such as critical thinking, ethical reasoning and cultural competence that are necessary for the leadership of contemporary health systems (Koo & Lapp, 2014).

f. Emerging threats. Humanistic approaches offer a more nuanced understanding of factors contributing to phenomena such as antimicrobial resistance. In this regard, "One Health" integrates the social and cultural dimensions essential for prevention and tailored response (Koo & Lapp, 2014).

The humanities make essential contributions to public health by exploring social determinants, strengthening communication, reinforcing ethics, supporting intersectoral collaboration, and preparing tomorrow's leaders. These contributions are fundamental to shaping people-centred, resilient and equitable health systems.

I believe that, in a present marked by recurrent health crises and an increasingly uncertain future, the role of the humanities in public health is becoming not only useful but indispensable. Public health can no longer be conceived strictly as a discipline of biostatistics and preventive policies - it must be rethought as a discipline of deep understanding of the human in social and historical context. In my view, one of the most valuable contributions of the humanities is the ability to reveal the hidden causalities of disease - those social, cultural or ethical determinants that explain why some populations are consistently more vulnerable. It is not enough to count cases; we need to understand the stories behind them. This is where the humanities have a powerful voice: teaching us to listen, to contextualize, to interpret. During the COVID-19 pandemic, we witnessed a painful lesson: without trust, effective communication and respect for cultural diversity, even the best health measures can fail. This is why I believe that the humanities can provide tools to rehumanize health messages. Narrative, in particular, can rebuild bridges between science and lived life. In a world bombarded with data, story remains the ultimate tool of persuasion. Ethical considerations are, in my view, another pillar on which the future of public health must rest. Issues such as mandatory vaccination, the allocation of scarce resources or equitable access to treatment are not just technical matters - they are profound moral dilemmas that require more than algorithms and protocols. Philosophy, bioethics, human rights theory - all can shape public health with a human face. I also appreciate the idea of interdisciplinary collaboration. Health is often treated in silos: people, animals, environment, policy - all separate. But reality shows us ever closer interdependencies. I personally believe that the "One Health" perspective, underpinned by a humanistic approach, helps us see the whole, not just the parts. This "big picture view" is exactly what many health policies lack. Moreover, the public health leaders of the future will need not only managerial or epidemiological skills, but also ethical insight, cultural sensitivity and critical thinking. This is where humanistic

education can make a difference. It trains not just specialists, but moral citizens of the world, able to manage complexity without losing sight of human dignity. Humanities must be seen as strategic allies of public health. They offer not just alternative answers, but the right questions. And in times of intersecting inequality, disease and mistrust, humanistic questions can become essential guides to healthy and ethical practice.

6. A mind map of humanism in medical practice

The mind map presented in this section was created to synthesize and visualize the relationships among the key concepts identified in the reviewed literature related to the integration of the humanities in medical education. This map is not merely a graphical scheme, but is the result of a reflexive process of thematic and conceptual organization, aimed at facilitating a multidimensional understanding of the topic.

The process of constructing the mind map followed several stages. On the basis of the narrative analysis and literature reviews included in the study, recurrent themes related to the role of humanities in contemporary medicine were identified. These included: narrative medicine, empathy, ethics, ethics, communication, cultural competence, professional burnout and critical thinking. The extracted themes were organized into major thematic categories, reflecting the logical structure of the paper's content. For each category, the interrelationships between concepts were analysed. For example, empathy is simultaneously an outcome of humanistic education and a prerequisite for patient-centred care; at the same time, it contributes to the prevention of burnout and to the improvement of clinical communication. The concepts in the map were placed according to their frequency of occurrence in the literature, their argumentative relevance in the text, and their cross-cutting role in several stages of medical education. A balance between visual clarity and information density was sought.

This mind map (Table 1) therefore functions as a visual summarization tool, but also as a conceptual representation of the whole argumentative logic of the paper. It allows both a quick understanding of the thematic focus and an in-depth exploration of the links between the humanistic dimensions of medical practice.

Table 1

Mind Map - Humanism in Medical Practice

|		
Core Principles of Humanism	Empathy	Understanding and sharing the feelings of patients (Ong & Anantham, 2019))
	Compassion	Providing care that is sensitive to the emotional and psychological needs of patients (Ong & Anantham, 2019)
	Respect for Patient Autonomy	Valuing patients' rights to make informed decisions about their care (Goldberg, 2008)
Educational Integration	Pre-Medical Education	Importance of humanities courses (literature, philosophy) to build foundational empathy and ethical reasoning (Qian et al., 2018)
	Medical School Curriculum	Early Years: introduction of medical humanities to enhance communication skills and patient-centred care (Hoang et al., 2022) Clinical Training: application of humanistic principles in real-world settings, emphasizing narrative medicine and reflective practice (Tseng et al., 2016) Continuing Medical Education: lifelong learning in humanistic approaches to combat burnout and maintain empathy (Özçakir & Bilgel, 2018))
Key Components of Medical Humanities	Narrative Medicine	Using patient stories to enhance understanding and empathy (Y.-T. Chen, 2023)
	Ethics and Philosophy	Exploring moral dilemmas and ethical frameworks in clinical practice (Shapiro et al., 2009)
	Arts and Literature	Engaging with creative works to foster reflection and emotional intelligence (Macneill, 2011)
Benefits of Humanism in Medicine	Improved Patient Outcomes	Enhanced communication leads to better patient satisfaction and adherence to treatment (Howick et al., 2021)
	Reduced Burnout	Humanistic training helps mitigate emotional exhaustion among healthcare providers (Özçakir & Bilgel, 2018)
	Cultural Competence	Understanding diverse patient backgrounds improves care quality (Chiu et al., 2019)
Challenges and Considerations	Curriculum Development	Need for institutional commitment to integrate humanities into medical education (Houston, 2018))
	Assessment of Outcomes	Difficulty in quantifying the impact of humanities on medical practice (Gillis, 2007)
	Balancing Science and Humanities	Ensuring that humanistic education complements scientific training rather than detracts from it (Hindin, 2023)
Future Directions	Interdisciplinary Collaboration	Encouraging partnerships between humanities and medical educators to enrich curricula (Houston, 2018)
	Technology Integration	Utilizing digital platforms to enhance the teaching of medical humanities (Kemp & Day, 2014)
	Global Perspectives	Incorporating diverse cultural viewpoints in medical humanities education to address global health challenges (Stewart, 2020)

7.   Bibliometric analysis

General network image analysis

Overall network structure. Nodes (keywords/concepts): each term in the graph represents a concept frequently used in the literature review. Links: lines between concepts indicate frequent co-occurrence in the same sources. The thicker the line, the stronger the relationship between concepts. Distance between nodes: closer concepts are more closely connected, while more distant concepts are less connected. The bibliometric map obtained is shown in Figure 1.

Figure 1

Bibliometric image generated using VOSviewer
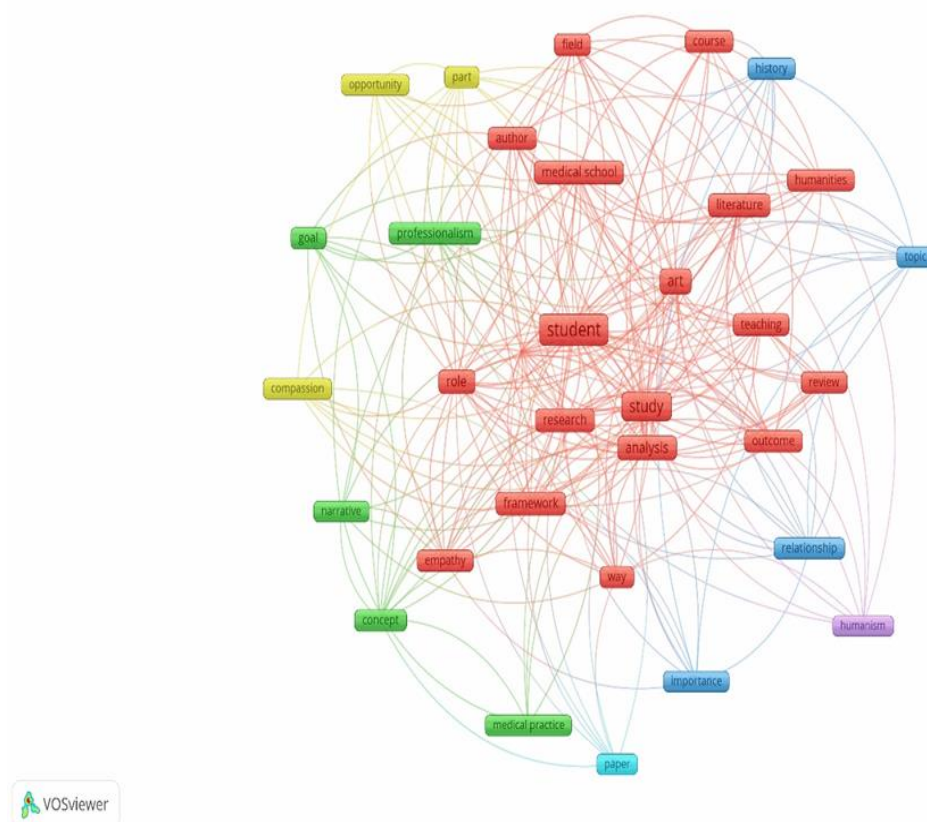
Identifying clusters (thematic groups). The bibliometric map generated by VOSviewer reflects a dense and interconnected landscape of concepts, highlighting the multiple dimensions through which the humanities articulate with medical education. The five identified thematic clusters - marked by distinct colours - outline a coherent conceptual network revealing the current dynamics of research in the field.

Red cluster - Medical education and pedagogical research

This constitutes the semantic core of the map, with the centrally located node 'student' surrounded by terms such as "study", "teaching", "medical school", "art" and "course". The density of this cluster signals that the current literature focuses on how the humanities are used as educational tools - not only complementary, but profoundly formative - in the preparation of future medical professionals. Terms such as "framework", "analysis" or "outcome" indicate a clear methodological concern: the authors not only explore the impact of art or literature on learning, but measure the effects on empathy, critical reflection or communication.

Green cluster - Personal values and interpersonal competences

Centred around the terms "empathy", "narrative", "professionalism" and "concept", this cluster reflects the ethical and relational dimension of medicine. The integration of the humanities is presented as a way to cultivate genuine professionalism through a deep understanding of the patient's experience. Narrative emerges here as a transformative tool through which future doctors learn to recognize suffering, actively listen and develop personalized responses, not just clinical protocols.

Yellow cluster - Motivation, purpose and educational opportunity

Terms such as "goal" and "opportunity" signal a strategic component in curriculum development: the recognition that the humanities are not only useful, but necessary to achieve deeper educational goals. This cluster reflects an emerging discourse about revaluing these components as an integral part of a medical education that prepares "people doctors", not just "specialists".

Blue cluster - Conceptual and legitimacy framework

Encompassing terms such as "history", "topic", "importance" and "relationship", this cluster underpins the theoretical justification for the integration of humanism in medicine. It outlines a vision of medical education as an interdisciplinary field, where the history of medicine, humanistic epistemology and the importance of the doctor-patient relationship are presented as the foundations of professional training. This framework functions as a link between the didactic and practical dimensions.

Purple cluster - Philosophical vision of humanism

Although consisting of a single dominant term – "humanism" - this cluster expresses the essence of the whole map: the aspiration towards a medical practice guided by ethical, cultural and human values. Its lateral position in the map may suggest that humanism is a cross-cutting idea that cuts across all other clusters and provides a unifying vision.

Cyan Cluster - Scientific output and scholarly dissemination

The term "paper" signals the growing research interest in these topics. Its networking reflects the commitment of the academic community to document, analyse and promote the pedagogical and clinical benefits of the humanities.

Integrative Observations. Central nodes, such as "student", "study" and "empathy", suggest that the main research focus is directed towards the personal development and professional development of future physicians in a holistic training paradigm. The dense and multi-directional connections indicate a maturation of the medical-humanistic field: no longer isolated explorations, but a coherent network of ideas, methods and goals. Terms such as "narrative", "art" or "compassion" are recurrently included, suggesting that creative methods and reflective approaches are becoming central pillars of modern medical education.

This bibliometric map reveals a well-structured conceptual ecology in which the humanities contribute significantly to the transformation of the medical education paradigm. From shaping empathy and critical thinking, to enhancing communication and professionalism, medical humanism is not a decorative add-on, but a strategic necessity in an increasingly technical and complex medical system.

Relations between concepts. The term "student" is the most central, being connected to multiple themes, suggesting that the analysis focuses on medical education and training. "Study", "research" and "medical school" form a strong core, indicating that the analysis focuses on scientific literature in medical education. "Empathy" and "compassion" are connected with "medical practice" and "professionalism", suggesting that humanistic aspects are fundamental in medical practice. The graph shows that the current literature focuses on the role of medical education, the role of interdisciplinary research and the integration of the humanistic dimension in medical practice. The clustering suggests an interdependence between professional education, empathy-based practice and studies on the role of humanism in medicine.

Detailed interpretation of the "humanism" node - Network position and main connections. The "humanism" node is located in a distinct cluster (mov) and is connected to several concepts in other clusters. This suggests that it is a key concept with a linking role between different themes. It is directly connected with "relationship", "importance", and "topic" in the blue cluster, which indicates that humanism is analysed from the perspective of interpersonal relationships and the significance of this concept in medical education. It also has connections with nodes in the red cluster ("student", "study", "teaching"), suggesting that humanism is a topic of interest in the training of medical students. It also intersects with nodes in the green cluster, such as "medical practice" and "empathy", indicating a link between humanism and compassionate medical practice.

The meaning of the concept of "humanism" in this context. In medical education, its strong link with "student", "teaching" and "study" suggests that humanism is an

important subject in the training of physicians. It may include aspects such as empathic communication, medical ethics and the patient-centred approach. The connections with "medical practice", "empathy" and "compassion" indicate that humanism is considered essential in the doctor-patient relationship, promoting more attentive and personalized care. In medical theory and research, the relationships with "literature", "framework" and "analysis" suggest that humanism is studied from a theoretical perspective, and is analysed in the literature as a defining element of modern medicine.

The role of "humanism" in structuring the network. The "humanism" node acts as a bridge between the theoretical and practical dimensions of medical education. Although it is part of its own cluster (purple), its strong connections with the red, green and blue clusters show that humanism is not an isolated topic, but a cross-cutting one, integrated in multiple domains. It has a relatively small number of direct connections compared to nodes such as "student" or "study", but its influence is important due to its strategic positioning within the network. Humanism is a central concept in medical education, with links to ethics, interpersonal relations and compassionate practice. Its role in bridging the theoretical and practical dimensions makes it essential in developing an integrated approach to medicine.

The significance of the position of the "humanities" node in the network. In the generated network, "humanities" is a moderate-sized node, placed on the right-hand side of the graph, as part of a blue cluster, together with terms such as "history", "relationship" and "topic". This position indicates that "humanities" is not a central node (like "student" or "study"), but plays an important role in connecting the medical field with its humanities dimensions. The main connections of the "humanities" node are with the following terms: "history" (the relationship suggests that humanities include a historical perspective on medical education and practice), "relationship" (indicates the importance of humanities in the development of inter-human relationships, including doctor-patient communication), "art" and "literature" (confirms that the humanities approach includes artistic and narrative aspects, being a key element in humanistic medical education) and "teaching" (emphasizes that humanities are integrated into medical teaching, having a role in shaping students' ethical and empathic attitudes).

Interpreting the network position of the "humanities" node. By its marginal position (top right), "humanities" is connected to educational and historical concepts, but it is not a central term in medical education, suggesting a supporting rather than a dominant role. Connectivity is high; it is connected to "teaching", "art" and "relationship", indicating that it has a significant influence on medical education. The cluster is distinct (blue) and differs from the red cluster of "student" and "study", suggesting that the humanities are a complementary, but not foundational, domain in medical education. The position of the "humanities" node in the network reflects its status as an interdisciplinary

field, essential to medical education, but secondary to core disciplines (such as "study" or "student"). This indicates that humanities are important for the development of empathy, ethics and the doctor-patient relationship, but are often seen as a supporting component in medical education rather than a core element.

Significance of the position of the "medical school" node in the network. "Medical school" is a node of large size, located in the upper-centre area of the network, being part of the red cluster. Being connected to important terms such as "student", "study", "teaching" and "research", it occupies a strategic position, indicating a key role in the conceptual structure of medical education.

For a clarification of the results obtained from the bibliometric analysis, we produced an interpretative table (Table 2) including key nodes (such as "student", "empathy", "study", "art"), the type of each node (concept, value, discipline, etc.), frequency and centrality (estimated based on visual dimension), significant relationships between terms, thematic area, and relevant interpretative observations.

The main connections of the node - "medical school" are with the following terms: "student" (indicates that the main objective of medical schools is the training of students), "study" (the relation suggests that learning in medical schools is an essential component of the network), "teaching" (confirms the essential role of medical schools in teaching and training future professionals), "research" (suggesting that academic work in medical schools is not limited to teaching but also includes research), "framework" (suggesting that medical schools follow clear educational structures and models) and "outcome" (the relationship shows that the aim of medical school training is to produce concrete outcomes - e.g. the top-centre position shows that "medical school" is a major intersection point between educational and research concepts).

The red cluster is strongly related to medical education, academic studies and learning. High connectivity indicates that "medical school" is an important hub for most processes related to medical education. Links with "research" and "framework" suggest that medical schools are not only centres of learning but also of innovation and development. The central position of the node "medical school" confirms that it is a fundamental concept in medical education, functioning as the core of training, research and teaching. This suggests that medical schools are the focal point of scientific knowledge and professional development, influencing both student learning and the production of new knowledge through research.

Table 2

Relevant interpretative remarks

Network Node/concept	Network node type	Frequency Relevance	Significant connections	Thematic area	Interpretative remarks
"student"	Central concept	Very large	"study" "teaching" "empathy" "art" "role"	Medical education	The most frequent node; pivot of the thematic network
"study"	Methodological concept	Large	"student" "analysis" "outcome"	Medical research	Related to academic rigor and evaluation of interventions
"humanities"	Disciplinary theme	Medium	"literature" "art" "teaching"	Humanities	Related to narrative and aesthetic methods
"art"	Humanistic discipline	Large	"student" "literature" "empathy"	Medical training	Didactic tool for reflective learning
"empathy"	Personal competence	Medium	"student" "concept" "compassion"	Interpersonal skills	Connected to the results of humanistic training
"compassion"	Ethical value	Medium	"empathy" "narrative" "professionalism"	Medical practice	Close to resilience and human relationships
"professionalism"	Ethical dimension	Medium	"goal" "compassion" "student"	Professional identity	Suggests the integration of humanism into deontological codes
"medical school"	Institutional framework	Medium	"course" "teaching" "author"	Education	Key environment for the application of humanistic integration
"narrative"	Pedagogical tool	Low-medium	"empathy" "compassion" "literature"	Narrative medicine	Emerging methodological element
"humanism"	Philosophy / value	Low	"relationship" "empathy" "topic"	Conceptual framework	Transversal concept, with an integrating function
"analysis"	Methodological technique	Medium	"framework" "study"	Research	Anchors the scientific perspective in educational reflection
"literature"	Educational resource	Medium	"student" "art" "teaching"	Humanities	Reflects the diversity of learning environments

Conclusions

The importance of humanism in medical practice. Narrative review and bibliometric analysis convergently emphasize the role of humanism as the foundation of person-centered medical practice. The human dimensions of care - empathy, compassion, ethics, and the ability to listen to the patient's story - are frequently cited in the current literature as essential for building trust and sustaining an effective therapeutic relationship. Medical practice that integrates these elements enables a deeper understanding of suffering, avoiding the biological reductionism of the traditional biomedical model. Humanism thus becomes not just a personal attitude but a clinical competence.

The role of humanities in medical education. Medical education benefits significantly from the integration of the humanities - literature, philosophy, ethics, the arts - at all stages of training. The analysed results show that the study of humanities contributes to the development of empathy, critical thinking and communication skills, preparing students for the complexity and ambiguity of clinical realities. Moreover, early exposure to humanistic themes, through narrative medicine or reflection on patient experience, reinforces a professional culture based on moral responsibility and social awareness. Educational programs that include such dimensions generate not only academic performance but also personal and professional resilience.

The contribution of humanism to public health. From a public health perspective, medical humanism offers a complementary and necessary approach. Integrating cultural, social and ethical knowledge into health policy development and implementation facilitates more equitable and context-sensitive interventions. Bibliometric analysis highlights the growing interest in topics such as social determinants of health, cultural competence and social justice in the literature. The holistic approach underpinned by the humanities thus helps to reduce health disparities and promote care centred on the real needs of communities, not just on technical standards.

Global perspectives and emerging trends. Trends identified in the global literature suggest a strengthening of interest in humanistic medicine, reflected in the emergence of new interdisciplinary educational programs, an increasing number of publications dedicated to the subject, and the active participation of medical universities in curricular reform initiatives. Bibliometric analysis indicates an increasingly dense and connected research network around the concepts of narrative medicine, empathic education, reflective writing and ethical leadership. The globalization of medical education and the diversification of patient populations call for an expanded understanding of the human dimension of care, making humanism a strategic component of quality health care.

Integrating the humanities into medical education and practice is not an intellectual luxury but a practical necessity, supported by both narrative and bibliometric evidence. Medical humanism improves the quality of the relationship with the patient, contributes

to deeper professional training and supports the goals of health equity and inclusion. In the face of an often-fragmented healthcare system, pressured by technology and performance metrics, a return to humanistic values offers a rebalancing framework - of science through conscience, efficiency through empathy, and knowledge through wisdom. Cultivating a humanistic medical culture thus remains a prerequisite for genuinely human-centred healthcare.

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New tools for approaching translation studies by simulation environments: EVOLI and ECORE

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Abstract

The context of this study was offered by the Erasmus+ research project Eco/logical Learning and Simulation Environments in HE (2018-2021) which focused on the development of web-based digital resources such as EVOLI and ECORE. In this paper, our objectives are to show their actual use as part of our teaching-learning translation activities, their essential role in our efficient interaction with students and their overall interdisciplinary applicability.

As far as EVOLI is concerned, the methodology we have employed focuses on a YouTube talk given by Anthony Pym on natural equivalence theories and a YouTube speech by Jeremy Munday addressing general topics related to Translation and Interpretation Studies. The alternative online digital tool, ECORE, is a storyboard or serious game in which an avatar generates content input, and the player must choose an answer from the options provided. Some of the theorists we have considered in our research are Richard Andrews (on ICTs), Anthony William Bates (digital teaching), Roger Thomas Bell (translation studies), Pitt Corder (translation errors), Eric Sotto (learners' motivation), alongside those of the translation studies (TS) leading personalities above.

The findings centre on the students' feeling encouraged and motivated to analyse EVOLI materials, submit feedback and share their opinions, as they may watch the video(s) at home, this leading to their easier learning about TS and not only. Also, the ECORE metaphoric structure might be more challenging for certain students to adapt to, and the shifting perspectives demand cognitive effort for them to grasp the reasoning behind the activity. Although students typically enjoy engaging elements like the speaking avatar, vibrant background, and interactive aspects of the online tools, there are a number of problems they encounter which point to the areas that they need to tackle in order to better master their discipline of study.

Keywords: teaching translation; equivalence; digital tools; serious games; simulation environment

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Introdution

The present article focuses on two digital tools which can be efficaciously employed in teaching translations studies (TS): EVOLI and ECORE. They were developed within the frame of the Erasmus+ research project *Eco/logical Learning and Simulation Environments in Higher Education* (ELSE). By combining pedagogical, humanistic and computer knowledge, one has been able to create new teaching tools usable on specially devised platforms for students' and teachers' real benefit. Due to their newness, their use in higher education environments is limited and research about them is less developed than it should be.

The ELSE project multidisciplinary team developed a limited series of new teaching digital tools. Among these, one can find EVOLI (a registered video incorporated in the course material or a registered video of the whole course complete with a digital feedback sheet) and ECORE (a storyboard or serious game (SG)). These teaching digital tools are meant to contribute to the learners' intellectual development and to their capacity to self-evaluate their knowledge of TS. Such instruments are very helpful for the evolution of teaching methodology which, under the pressure of overall modernization, must bring something new to the fore so that it may successfully combine digital and classical teaching.

ELSE tools prove to be very helpful in teaching TS, by encouraging the involvement of all students in the teaching-learning process. They also allow the teacher to have access to synchronous feedback from all of those who participate in the teaching-learning activity (whether that involves learning theory, the solving of practical exercises or the assessment of the material taught) and to take the necessary measures in order to correct the possible errors of the teaching-learning process.

The aim of this article is to show the usefulness and importance of employing such digital tools, as EVOLI and ECORE, while teaching TS classes, to highlight their actual way of functioning and to open new doors for innovative didactic activities, as they are currently quite rarely used in TS courses. Our objectives include demonstrating their essential role in our efficient interaction with students, proving their actual use in our translation course teaching-learning activities and showing their overall interdisciplinary applicability.

Theoretical Background

One of the theoretical fields we considered is that of TS. We focused on Pitt Corder (1977) who dealt with translation errors, quite an important issue for teaching TS classes and analysing wrong interpretations. His approach helps the teacher interpret students' reasons for making mistakes while solving the SG exercise, mistakes being the best tool of one's TS learning and not only. Still in the realm of TS, Anthony Pym (2020) and Jeremy Munday (2020), renown TS theorists, were employed for their clear explanations of the ways students should understand natural equivalence and deal with the accurate rendering of texts in a target language depending on the translation method that they use.

Also, Roger T. Bell (1993) and his theory on ways of faithfully translating texts by grasping the 'whole picture' proved instrumental in showing the importance of context in TS, which is a problem of both digital exercises.

As far as teaching didactics is concerned, Eric Sotto and his 1995 material on teaching and learning and their interdependency when it comes to the performance of these teahing-learning activities in class was employed in order to discuss such problems as those connected to students' learning motivation while solving the EVOLI and ECORE digital exercises. We also referred to Werner Delanoy (1993) and what it means to misinterpret students' role in class as far as their level of TS knowledge is concerned. This was thought relevant in order to raise the issue of balance regarding teacher's requirements of students. Towards the end of the paper, we added Bruce Wilkinson's (2003) view on teaching as a life changer offering a viable behaviour pattern which all students can take over.

In relation with the area of TEL (Technology Enhanced Learning) and students' use of e-skills in class for learning purposes, we referred to Roberto Vardisio and Patricia Chiappini (2015) and the additional skills developed by TEL, which should be considered a plus to the known skills we all make reference to (listening, writing and assessment). The methodology of teaching also comprises Dieter Wolff's (cf. Rüschoff, 2016) theory on students' autonomy and teacher's guiding role in the process of teaching-learning based on EVOLI or ECORE. The theory on gamification uses in the context of teaching extended as far as Gutiérrez-Artacho and Olvera-Lobo (2016)'s arguments regarding the role games play in students' learning and their effects, while A.W. Bates (2019) was mentioned in order to highlight the importance of recognising the improvements that digital game use in the teaching-learning process brought about for students' benefit.

The interdisciplinary approach of the paper also determined us to include studies of psychiatry and psychology, for us be able to meaningfully approach issues such as empathy (Roy Schafer, in Nancy Morgan, 1984), useful in understanding students' need of help when they do not dare ask and explanations are still needed. We also dealt with foreign consciousness (Edith Stein, 2019), i.e. teacher's understanding of students' internal struggle with knowledge which is very important for the objectives of our paper. In addition to this, introspection and inner life (Heinz Kohut, 1977) had to be considered for an essentially healthy interaction with students while they attempted to go through the EVOLI and ECORE exercises. These all contributed to the development of a broader perspective on the topic of the research paper.

Methodology

EVOLI

EVOLI is a digital tool created by Università Politecnica di Milano (Italy) under the supervision of prof. dr. Alba Graziano, Università degli Studi della Tuscia, Viterbo (Italy), the coordinator of the Eramus+ project ELSE. West University of Timişoara team used a new digital exercise created with the help of this tool which requires students of all ages

to use both computers and internet in their work. The groups of students involved in this study were the third-year students specialising in Applied Modern Languages learning, in their first semester, a course on the Methodology of translation from English into Romanian at the Faculty of Letters, History and Theology, West University of Timişoara.

The exercise *per se* implies the recording of a video of the class taught by the teacher or the selecting of a video that has already been recorded and uploaded on YouTube and its insertion in a table (see Figure 1) available on the platform created by our partner from the Polytechnic University of Milan. The table also requires one to insert a title of the class/ course or of the part of the class/ course which this video is going to explain.

**Figure 1**

Evoli course table
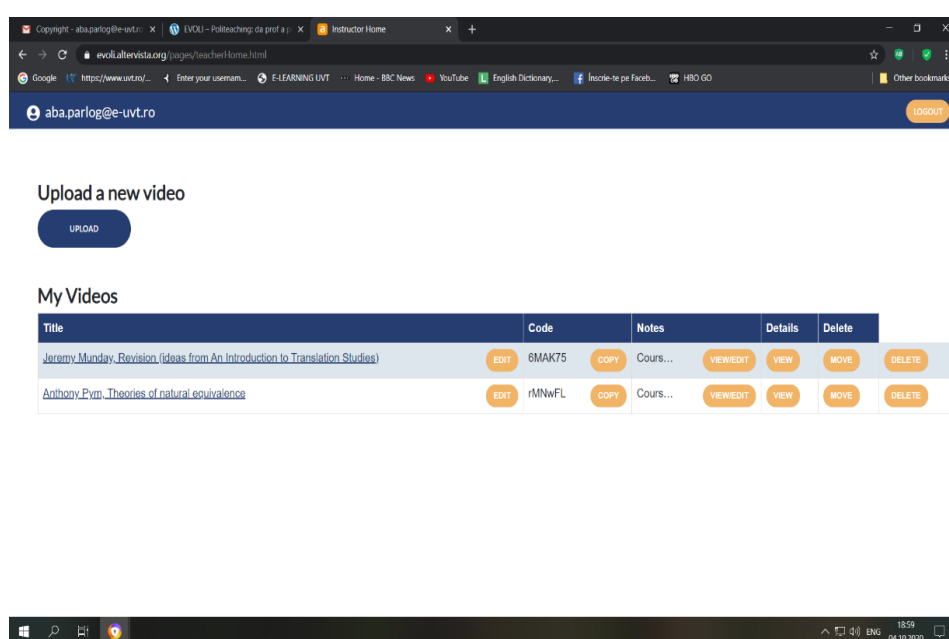
The EVOLI tool can be used in blended learning classes which include classical and modern teaching and can be easily watched at home by students who are then able to generally assess them by clicking on the "I get it" (☺) or "I do not get it" (☹) icon (see Figure 2. Pym lecture below), thus throwing light on the degree of usefulness and clarity of the selected video. The videos may also contain a whole class which students generally cannot follow from A to Z as attentively within the same amount of time in class as at home, so watching, stopping and re-listening to particular passages at home is similar to the careful re-reading of a (known) course and has the aim of clarifying possible gaps in their understanding of the theoretical strands and concepts dealt with.

The overall evaluation of the material assists the teacher in rethinking his/ her future class(es) and modifying whatever it is that slipped his/ her attention. In the blended learning class focusing on equivalence problems, part of the course on the methodology of translation, one such EVOLI video – which is roughly nine minutes – has been included.

This video helps students discover the important TS theorist, Anthony Pym (2020) being very eloquent while briefly lecturing on the theories of natural equivalence (see Figure 2).

Figure 2

Pym lecture
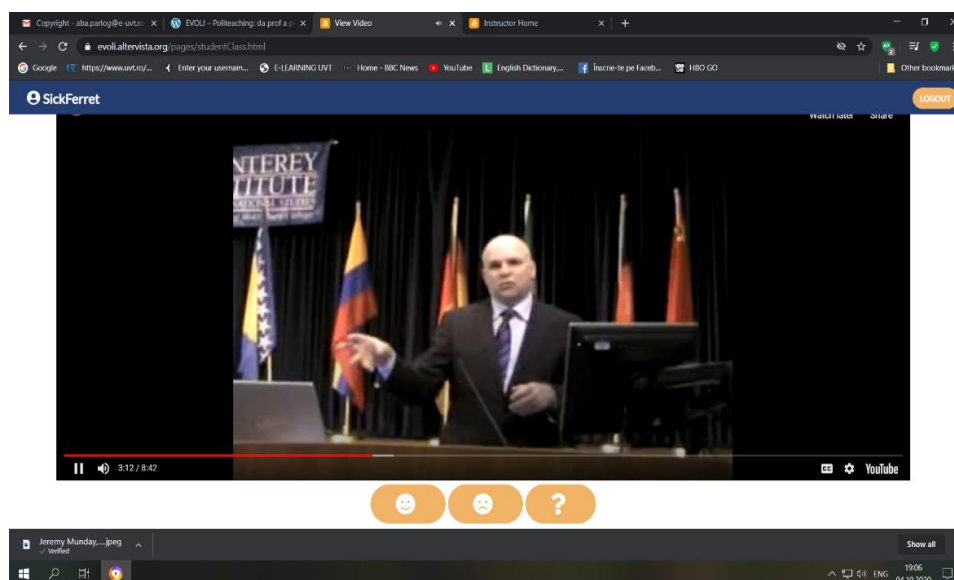
Pym presents his theoretical ideas in a slow pace which makes the material easily understandable by students with a wide range of English levels – from lower intermediate to proficiency. Given that he does not talk about a very complex TS topic, there is less terminology. His reference to other theorists and use of translation examples should make the video crystal clear to students with varying degrees of translation knowledge.

The other video included in the class on translation methodology is a recording of another well-known theorist in the field of TS, i.e. Jeremy Munday (2020) who speaks much faster than Pym (2020) and delivers a similar amount of information in half the time. It is, of course, a challenge for students' listening skills and it requires them to pay close attention to the material that he refers to. The specific course class during which it appeared necessary to have Munday (2020) present, even if for a short time, was meant to be a roundup workshop on TS at the end of the semester.

ECORE

The ECORE platform was created by the Italian computer company Entropy Knowledge Network based in Rome, Italy which was also one of the partner institutions in Erasmus+ *ELSE* project. The ECORE exercise created on this platform presupposes the existence of a storyboard or an SG. The game-like mould ensures the combination of funny activities with learning, so that students may learn much more easily. As opposed to classical translation exercises whose structure is not based on visuals, in general, and which have clear indications as far as their solving is concerned, storyboard has no indications which

are, however, understood from its linguistic input. Each step of the exercise comprises one sentence or one question or several presented by an avatar and the player's choice of a three-sentence set as a reply which suggests the necessity of selecting one in order to move on to the next step of the exercise.

The focus of the SG is that of understanding theory and practice in depth, whereas that of a classical exercise is that of developing one's knowledge of language-in-use. Usually, a classical exercise relying on the linguistic basis of the storyboard is employed for evaluative purposes, while, in class, the SG may be used when the teacher lectures about the theory of TS or has students do translation exercises.

Teachers should clarify ECORE structure and rationale so that no impediment should make it hard for learners to choose the right option out of a set of three (in our example) belonging to each of the 10 sets of inputs previously inserted. These sets can range from 1 to 10 according to the teacher's aim and the score considered relevant for each student group.

For one to be able to accurately solve or play an SG, the context forming its background – included in the general information sheet about the translation exercise – is very important and it is presented in the beginning, in the slot of the table (Figure 3) after the one where the title of the exercise is supposed to be inserted.

Figure 3

Ecore editor (table 1)

If the context is defined by much complexity, one should stick to the general lines which students can easily remember when playing the translation SG. Context details can be explained in the formulae used by the avatar (Figure 4) who can say very much for its input of each question as this is meant to trigger a particular kind of response on the part

of the player. Then, s/he can find the right answer among the three suggested options (Figure 5).

Figure 4

Ecore - Input 1

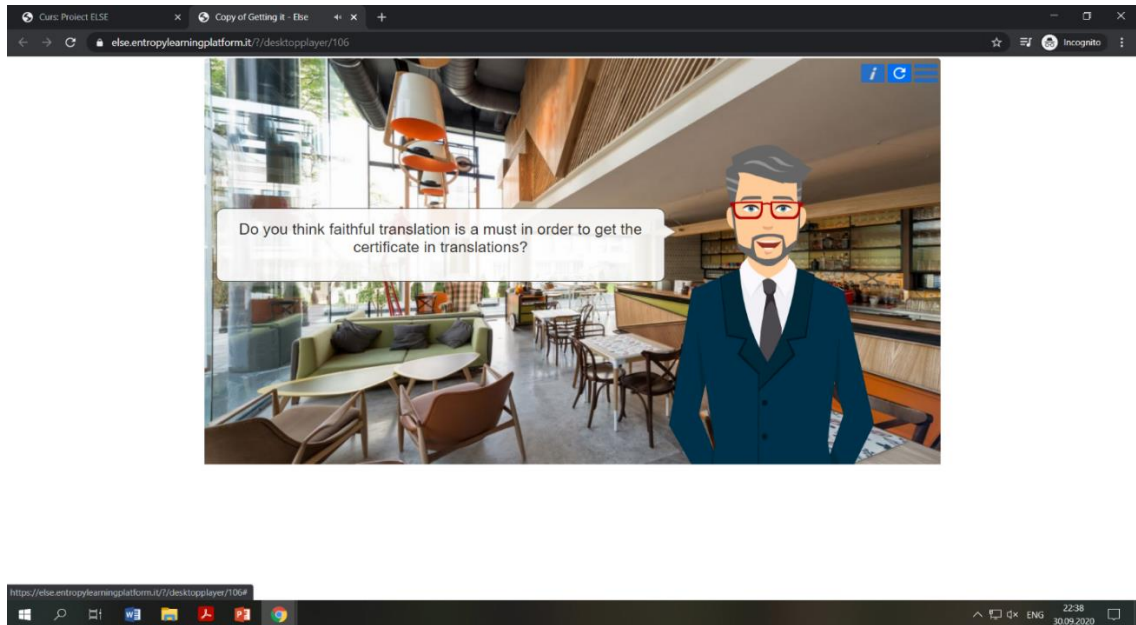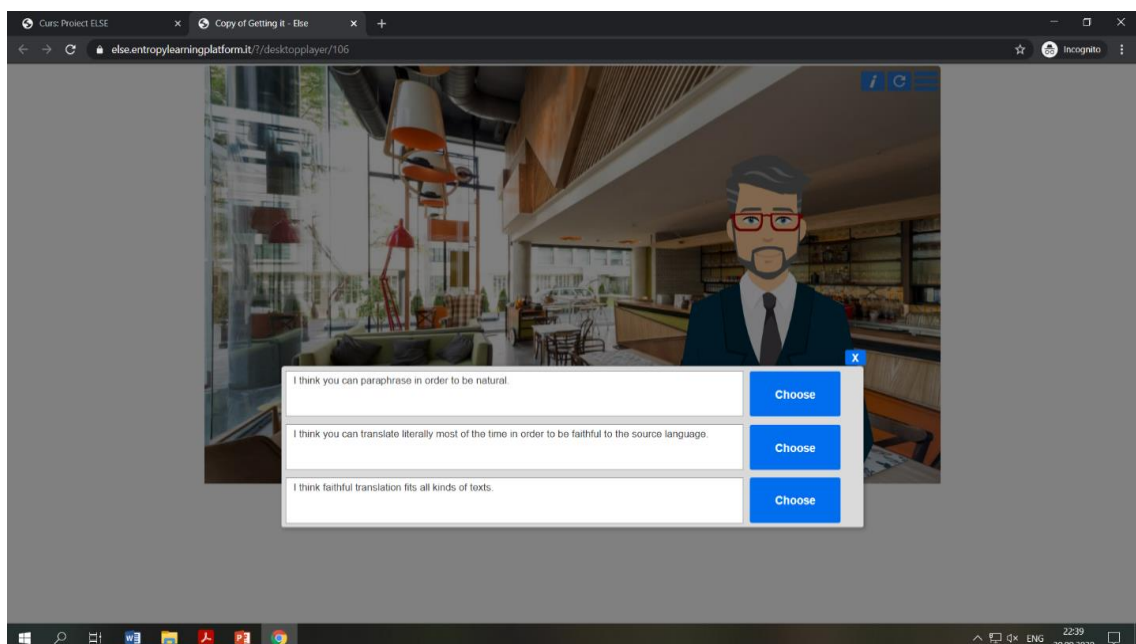**Figure 5**

Ecore - three options for input 1

These options cover an answer which is accurate in all translation situations, one which is only sometimes accurate and one which is inaccurate. For students who select the answer, which is right only in some situations, the final score will never be the highest. This intermediate option describes situations which are generally right in the given

context, but are, at times, wrong because of the particularities of the translation process. The rules that are generally valid for literary translation, for instance, will never be so for specialized translation, such as the medical or the technical one.

If, for instance, there are students who generally do not understand parts of the text which they are supposed to translate and do not think of using any dictionaries, but simply deduce meaning from context, most likely, these are the students who will make a mistake when answering certain questions which test their understanding of particular words, constructions or expressions. The same holds for selecting, for example, the right method of translation (a question related to the faithful method of translation in the SG) – students who are not aware of what the question entails, how they are supposed to choose the right option, what motivates their selection, which exceptions they are to consider, will most likely answer such a question inaccurately. The example refers to a question belonging to an SG on general translations and not an SG on specialized translations.

The question about the faithful method of translation and its possible answers can be clearly understood if one considers Roger T. Bell's (1993: 117) argument on grasping context. It is also important for us to discuss the framework lying behind the whole concept of ECORE. This is metaphorical and it is meant to be more suggestive rather than literal (as it is in the case of classical exercises). The implied comparison between various translation processes and particular situations that one may encounter in everyday life aims at clarifying the manner in which translation works for those learners who have problems in understanding it.

Results

The results obtained and discussed in this paper belong to our team that focused on TS and teaching methodology. Out of the 26 students who watched Pym's video, more than half thought it significant to interact – 15 comments being registered (see Figure 6). The comments ranged from emphasizing the high quality of the given explanations and their important nature to the request for examples just a few seconds before they were provided or a few seconds afterwards. This kind of exercise encourages students' expression of opinion. Still, sometimes, because of their young age and lack of patience, the comments are given too early in the process, without their having given themselves the chance to listen to the whole theoretical strand developed by the theorist (Pym, in this case). This may be viewed as one of the downsides of this digital tool.

Figure 6

Evoli analytics – Pym
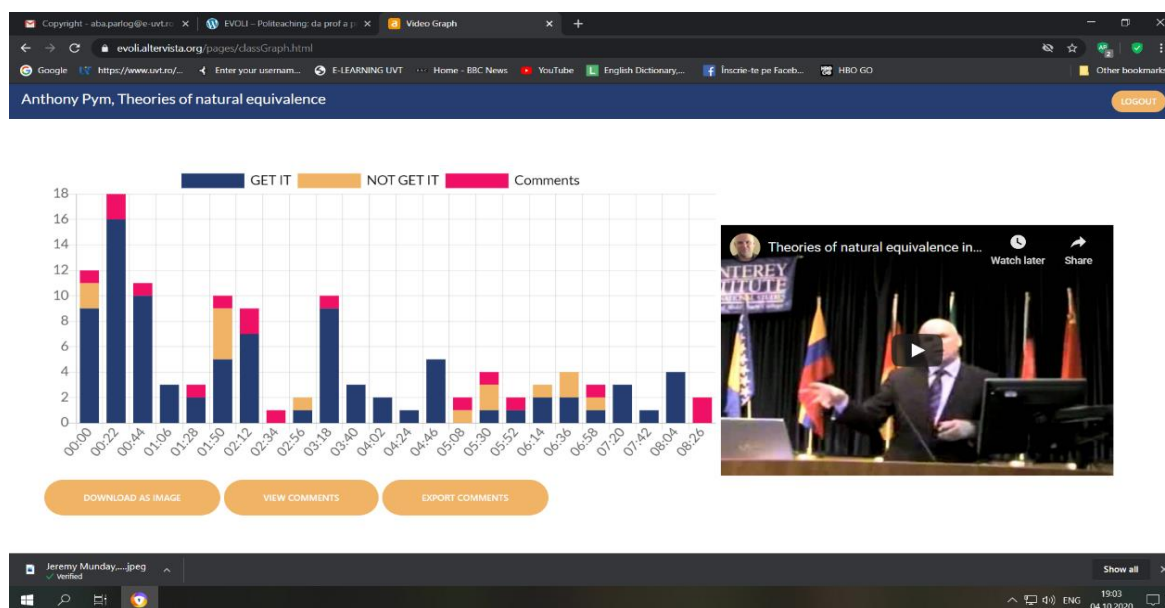
Munday's video being a simpler video to listen to, there were only 5 students who wrote comments out of the 18 students who had watched it (Figure 7). The general nature of the material may have made some students unaware of the mental links made by the theorist, leaving them with the impression that these are general issues that should be overlooked as easy and overall superfluous for TS.

Figure 7

Evoli analytics - Munday
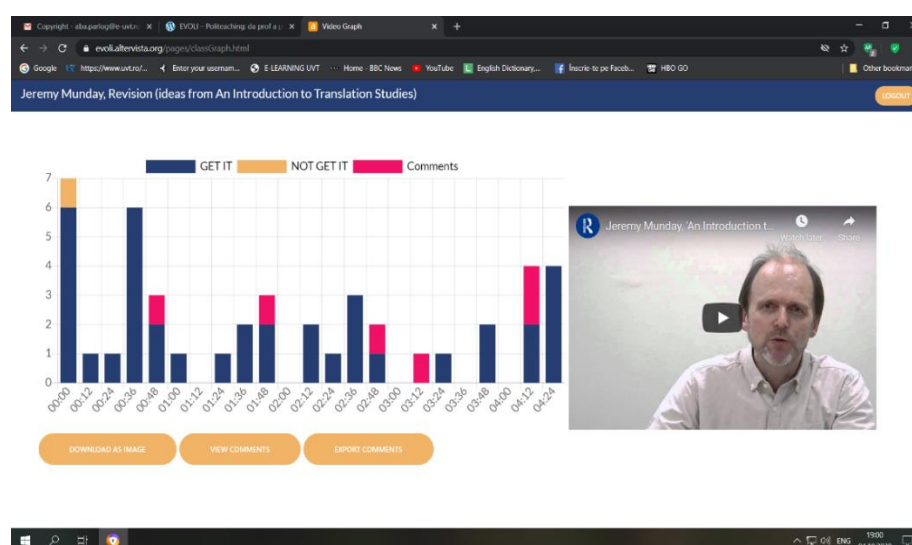
EVOLI used in translation classes is also very useful for enriching one's vocabulary while teaching translations in view of clarifying the theories in the field. Its interactive

character proves attractive for students who have graduated from high-school not such a long time ago and who very much enjoy the game-like structure of this digital tool.

The ECORE or SG was used in an MA group of 21 first year students specializing in the Theory and Practice of Translation Studies. More than half of the group had also been involved in the EVOLI study a year before while studying Applied Modern Languages. They appreciated the value of the exercise as an entertaining tool which motivates learning by its very structure.

The extensive complexity of the ECORE exercise only allows the presence of results under the form of a percentage which clarifies how well a student solved an exercise. The instant results (Figure 8) makes ECORE very attractive because students generally wish to find out how they fared as soon as possible, so it is an advantage to use this kind of exercise in a translation course and any type of course, for that matter.

Figure 3

ECORE result chart
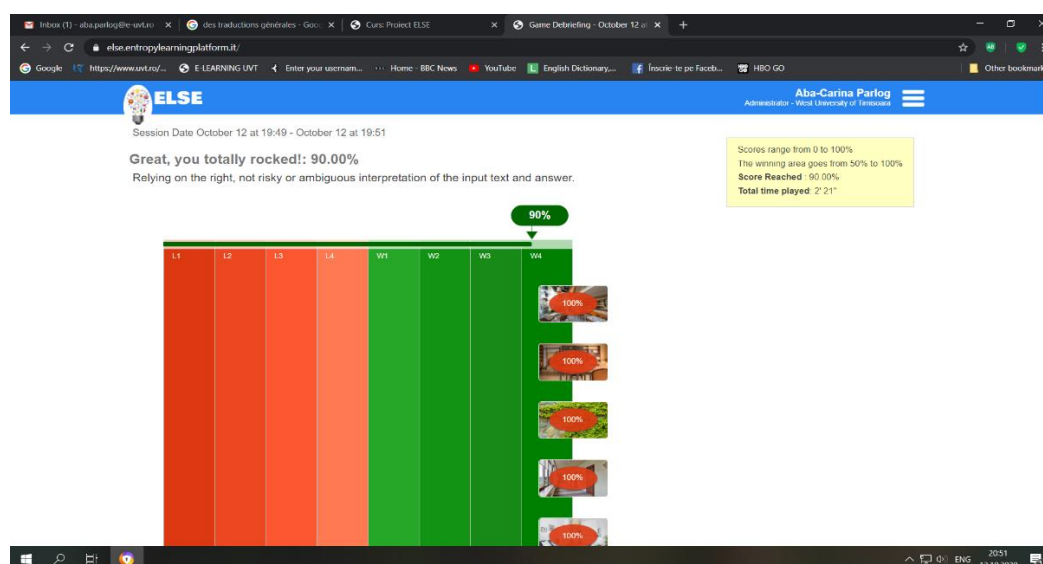
Overall, the students who were not sure about their answers were not very good at translating and had little knowledge about the theoretical layer underlying the process. The understanding of the game rationale cannot be done independently from the tested theory of translation. "While the nature and quality of mistakes a learner makes provide no direct measure of his knowledge of the language, it is probably the most important source of information about the nature of his knowledge. From the study of errors, we are able to infer the nature of his knowledge at that point in his learning career and discover what he still has to learn" (Corder 1977: 257).

Solving the exercise again allows students to improve their results and contributes to boosting their learning process. Even analyzing the given options and perceiving the difference between the general translation option and the one which fits a particular

translation case helps students use the theoretical pieces of knowledge much more responsibly and write much better translations.

The use of ICT is very well received everywhere. As Richard Andrews (2000: 30) states, "We see ICT as underpinning an enhanced and richer conception of literacy that brings together the verbal and the visual, the aural and the choreographic". Familiarizing students with such digital tools will only make them better teachers and better users of technology whatever their future professions may be.

Discussion

Using EVOLI in Teaching Translation Classes

Teaching translation should always be done with an eye to students' understanding of the impact depth that their translation will have on the reader, especially if, for instance, one discusses legal translation, in which case the document may be the centre of attention during a trial. "Errors may arise, on the one hand, as a result of the nature of the samples [of performance], their classification and presentation or, on the other, from the actual activity of processing the data" (Corder 1977: 283). A wrong interpretation can lead to serious problems which may affect the person who has requested the translation. In this case, the translator may be the one who will pay for the damages. It is thus essential that students focus on the details of the text they must translate, so that their end product should not miss any piece of information either.

The EVOLI tool is very helpful in teaching translation classes. The video feature of the tool is extremely useful for teaching staff interested in making their students' acquaintance with theorists known worldwide, whose opinions about particular concepts of the study field are more appreciated when presented by the theorists themselves. It is a chance for students to both listen to the theorist in person and to develop their skills of listening and writing because they are also encouraged to express their own views about these concepts.

EVOLI also gives them a chance to assess activities without being criticized as the insertion of comments is done anonymously. We found that this tool encourages their involvement, contributing to the development of their assertive skills and their capacity of rationally evaluating a material, as a result of listening to knowledgeable agents in the field. Should the material be very well received, it can be stored for prospective teaching in the same or a new adapted form according to the suggestions made by students and their level of knowledge. It is much more important to add videos with external interviews because they contribute to the diversity of opinion and perspective on the material taught.

The teacher should not attempt to motivate them by including materials which are meant to give them reasons for studying a particular field, as we could see. On the contrary, the teacher "must be alert to factors which may inhibit their learners'

motivation to learn. (…) [the teacher] must work with whatever motivation is already present in their learners" (Sotto 1995: 27-28).

It is very important for students to be able to use the video to the parameters that they deem necessary so that they may grasp its core message and not only. The volume they wish to set, for instance, may disturb other colleagues in class or may be too low for others, but, at home, they have the option of selecting the volume they need. Also listening to and following the video material in their own pace is essential, so that they may take notes and prove to themselves their seriousness about the field dealt with in class. Having no judgmental colleagues around is very useful for the ease needed to truly learn and be able to construct the theoretical scaffolding to rely on for their practical exercises.

The EVOLI video is quite helpful for students interested in TS. Very simply and entirely relevantly, Pym begins with the explanation of the noun "equivalence" which makes it facile for all students to grasp this concept. He then discusses two kinds of equivalence – natural and directional – which are basic for the understanding of the topic and which students must be aware of when working on translations. By also making links to Jean Paul Vinay and Jean Darbelnet, on the one hand, and Eugene Nida, on the other hand, he expands the understanding of the translation process through the prism offered by equivalence and its use when dealing with language specific words or constructions.

With the aid of explanations, Pym (2020) clarifies that dynamic equivalence or free translation and formal equivalence or literal translation are two of the kinds that we all must be acquainted with and must be able to differentiate without problems. As a result of the assessment part, most of the students thought the fragment of his speech manageable and some of them even inserted comments appreciating his addition to the explanations given throughout the fourth course on the methodology of translation. One can consequently say that EVOLI is a very good tool for teaching TS because it allows them to freely participate in the class by inserting their comments at the exact second when they consider it important to intervene and speak their mind.

In the second video, Munday (2020) begins by giving a common definition of the translation process, which is generally known by students, but, at times, difficult for them to explain. Listening to him is helpful for students to revise the general issues of TS, translator training problems, ways of tackling text translation by genre, purpose and also to become aware – if they are not – of the existence of more complex TS subdisciplines (such as interpreting TS, audio-visual TS, corpus-based TS or computer-assisted translation tools, machine translation, graphic novel translation, social media translation, etc).

What is difficult to do when using such exercises with one's students is to empathize with whatever feeling they may have on listening to a particular theoretical strand. If one is unsure and one does not pay much attention, there is always the risk that one may not insert a comment for fear of sounding simple. Nevertheless, comments are anonymous, and that makes it more encouraging for them to write their thoughts without any impediment. Moreover, listening to and watching such videos together with students in

class first gives the teacher a chance to add further pieces of knowledge which may make the videos clearer and may remind students of theories already discussed or examples that are familiar and already digested by them.

On empathizing with students and their needs, the teacher is prone to discover a series of problems which are easily solvable in the classroom and which can be hardly tackled if they learn from home and participate in online classes. In this case, students are not always encouraged to interact because of insufficient class time and there may not be any chance for some of them to do that unless they request a tutorial. However, despite the mass of students present in the classroom, empathy offers a solution to most of the questions they may have.

According to psychiatrist Roy Schafer (in Morgan 1984: 5) "empathy is to be distinguished from pure secondary process, from ordered inductive and deductive problem solving". Empathy allows the teacher to "experience *foreign* consciousness" (Stein cf. Avramides 2020), i.e. the sum of ideas that battle for understanding which preoccupy a learner. Seeing students that are worried may solve the problem at hand, as the teacher may feel inclined to ask students (a) clarifying question(s) in order to solve the conundrum. Empathy of such a kind refers to emotional states (Svanaeus 2018), i.e. emotional empathy which presupposes three processes, i.e. "the cognitive ability to perceive, recognize and discriminate emotional states in the other person" (Feshbach cf. Howe 2013: 13). A teacher's role on perceiving the learner's point of view and empathizing with him/ her is that of a communicator who should use compassion, recognition and understanding of the learner's query (Howe 2013: 14).

The electronic barrier of computers creates a problem which digital tools cannot solve even if they offer learners a chance to write their opinion in the slots especially conceived for that. As Edith "Stein observes that any debate revolving around the nature of empathy rests on the tacit assumption that other minds (…) are indeed experientially given to us (1917:11–13[3–5])" (Szanto & Moran 2020), we can see that some learners' minds remain closed even with the incentive given by digital tools, such as EVOLI, which are meant to contribute to developing their habit of communicating efficiently. Should motivation be low, students may feel that they do not need to make their standpoint known to their teacher.

The opposition theory – practice is also very much present in their minds solidified by the influence of the society which urges everyone towards superficial values and no principles, ideas supported by the great amounts of money people are supposed to make. As a result, students generally do not think about the necessity of learning theory and of solving exercises based on the theory learnt, focusing only on the practical, material, even remotely financial side of the matter (i.e. the moment when they become hired). Consequently, often without basic knowledge of language and TS, they tackle the process of translation making the same mistakes over and over again.

Thus, it is paramount for any TS teacher who uses EVOLI or any kind of digital tool to make it clear to learners that spelling and grammar knowledge is as important as

translation theory when researching the field of TS. This way students will become more interested in the TS course or class and will interact much more often, also considering it essential to make their opinion known when it comes to such exercises as those crated with the help of EVOLI. They will regard everything as a way of discovering and learning something new which contributes to their specialization development.

The expectations teaching staff have from students should never exceed the requirements of a usual course. They cannot act as fellow critics (Delanoy 1993: 97), which would be exaggerated on the part of the teacher to expect. Still, students are expected to contribute to constructive discussions focusing on the TS topic at hand.

Besides listening, writing and assessment skills, students deal with TEL (Technology Enhanced Learning), which according to Roberto Vardisio and Patricia Chiappini (2015) have "five substantial benefits: (1) creating new ideas and knowledge, (2) sharing and collaborating, (3) 'augmented experimentation', (4) ubiquity and personalization, (5) involvement and motivation". They can therefore practice their E-skills and learn to be more independent from their teachers and focus more on their self-development.

As Bruce Wilkinson (2003: 128) suggests, when one teaches, one should have in mind the change of one's life – so should learners using this distance-learning tool. The awareness that one transforms one's own life by learning connects one to reality more strongly and allows one to eventually shape one's wished-for personality. The link Christianity - learning which Wilkinson develops through his entire book, *Cele 7 legi ale învăţării. Cum să înveţi aproape orice, practic pe oricine* (*The 7 Laws of the Learner: Textbook Edition*), ensures that students become aware of the importance of commandments which also prevents the problem of cheating or lying about homework, tests and other activities that one has not done.

"The inner life of man" (Kohut 1977: 306) is essential in understanding others and a healthy inner life is essential in getting along as well. Heinz Kohut (1977: 306) explains that "via vicarious introspection", one may be able to know this inner life, so, of course, we infer that one can modify it so that it may raise to the standards required of a graduate of a particular study field. In this sense, our exercise also allows students to develop their inner lives by interacting, even though they may do so through an electronic interface, such as the EVOLI tool. Those of them who have questions may write them and although anonymous, they will be answered in front of the entire class so that everyone may learn from the remarks of those who listen to the EVOLI videos.

According to Dieter Wolff (cf. Rüschoff 2016: 39), a new methodology of teaching should presuppose such principles as "learner orientation, process orientation and learner autonomy". Students' dependence on teacher's nod for their answer to the question asked does not create autonomous learners. It is limitative and may result in a relation which is really counterproductive once one becomes hired. Digital tools devised for independent usage with a minimal involvement on the teacher's part prevents such detrimental results as the one mentioned above. As Bernd Rüschoff (2016: 39) very well argues "learning based on constructivist principles will allow learners to tap into

resources and acquire knowledge rather than force them to function as recipients of instruction".

Using ECORE in Digital Translation Pedagogy

By gamification, the students who are trained for a translation career can experience contexts similar to their future real-life tasks. As Gutiérrez-Artacho and Olvera-Lobo (2016: 50) affirm, "games encourage learning, given that when fun features in the process, motivation is increased and stress lowered." Using SG in training is of much help for the preparation of the prospective employee who will know exactly how to fare in the new environment after having taken part in simulation games. Much literature has been written in the field and it all points to the fact that exercises based on technology and human interaction offer an environment which creates specialists in the field that are much more trained for the challenges they will have to face once hired in a company or even working on their own.

According to A. W. Bates (2019: 427), the main reasons for using games in education are "to improve students' motivation to learn, engage learners more deeply in the learning process, improve learning outcomes, [and] improve attendance and participation." Following analyzed studies, Zhonggen (cf. Bates 2019: 427) mentioned that of "the 'huge number of findings in serious game assisted learning, most … are supportive, coupled with a few negative results.'" He also states that students' affective states are very much boosted by the use of SG.

In the field of TS, one generally cannot find exercises that are as stimulating as the storyboard or SG and that assess theoretical and practical principles at the same time in such a pleasant background. Multiple choice exercises are necessary in teaching translation because students are put face to face with a series of theory strands that they know and at times use inaccurately because of their disconcerting effect. They suddenly find themselves forced to solve a real-life situation and the more multiple choice exercises they do, the better prepared they are to apply the right translation theory to the right text and to select the right method for the right genre. Still, SG offers them more than that – they are under the impression that they interact with someone who asks for their expert advice on the matter of translation, so they play their part much more thoroughly as translators or interpreters.

Translating accurately can be done if one studies the real meaning of a text or microtext. According to Roger T. Bell (1993"117), "(…) the languages of the world and the speakers of those languages would express what they say in enormously different ways, but the picture would remain and, given that the translator's task (…) is 'to … see the picture clearly [since] it is the idea or picture that has to be communicated, and not the equivalents of the actual words' there can be no report of that picture which cannot be re-reported in another language, i.e. translated".

Thus, translating accurately can be done if one studies the real meaning of a text or microtext. The game is quite helpful in this sense because it has simulating factors

which makes learning more attractive, such as a colorful background, an avatar and, of course, the fact that the avatar's input can be listened to. All these are missing from a classical exercise in whose case the learner relies on his/ her pronunciation and linking of particular constructions in a meaningful way.

However, storyboard can be conceived in a simpler way so that students may have to choose, in a certain context, between various options that would render the general rules of the translation process. In this case, students may be asked to recognize the theory taught during the translation class in the step of the exercise which proposes such an operation. In such a way, their autonomous learning is boosted as it also is by the fact that no answers are provided at the end of the game.

According to Wilkinson, "The purpose of learning is the explanation of the truth" (2003: 125, our translation) and he is quite right in stating this. If the teacher were to just give some plain answers at the end of the SG without debating on the context of the question and the nature of the options provided, s/he would not be teaching much and students would not be learning much either. The truth concerning that particular matter would remain hidden and the purpose of the SG would not be achieved.

Unfortunately, the small number of students involved in the project does not allow us to discuss the variation of teaching success depending on the frequency of SG use in TS or on the level of the English language that students have. For such ideas to be tested with a higher percent of clarity, a greater number of SGs should be created and a greater number of students should be involved in the research. The same holds for the EVOLI digital tool.

Conclusions

In the translation field, it is essential to use ECORE because, through its uploaded exercises, it provides the real-life stimulus needed to train a translator by putting him/ her in the shoes of an employee. The SG also tells you how long it takes you to solve an exercise of such a kind – this again shows whether you can respond to tasks under pressure or to translation requests which are of an urgent nature. Teaching responsibility about one's translation is essential and that is done when the student, faced with the final SG score, is guided towards the realization that a score lower than 90% may result in problems or in a salary cut later in life.

SGs are the best answer to students' necessity of dealing with this domain in a constructive way. Talent is a streak of character that you are born with and someone who manages to solve SGs on translations without many problems can say that s/he possesses an undoubted talent in this area. Understanding the aim of such exercises and being able to quickly make a link between the metaphorical strands show that one has selected the right profession for one's future; "(…) metaphor as a reality (…) that will continue to generate new approaches as long as humanity lasts" (Pungă, Golea 2022: 55) determines the complexity of the exercises structure. In conclusion, accurately solving SGs in a short

amount of time may be rather difficult and can be considered similar to having been successful in an interview for a job in this field of knowledge.

EVOLI also contributes to one's capacity of grasping the importance of theory and its application to texts that presuppose an in-depth knowledge of translations. It is very much important to be independent in one's endeavour of studying and to acquire the self-assuredness needed to offer the best possible answers to translation exercises. Being empathetic and willing to clarify students' questions face to face, despite the digital interface, may also contribute to the teacher's efforts of creating an optimal teaching-learning environment in which all issues may be addressed and solved. Such tools as EVOLI and ECORE ensure that students get the necessary practice and that they are acquainted with real-life situations which they have a chance of learning how to manage. These tools are the answer to teachers' and students' necessity of combining classical and digital learning and the finest solution for a better preparation of our future specialists so that they may be able to take over.

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Guadalingo: a case study of a gamified video game for learning Spanish as a foreign language

Roxana GAIȚĂ•

Abstract

A gamified video game is a game that combines elements of the video game world with educational objectives. In other words, it is an educational tool that applies the elements of the game — like narrative, aesthetics, points, levels, challenges, rewards, missions, characters etc. — to motivate the student and facilitate learning. The reason why I decided to verify the effectiveness of the gamified video game Guadalingo, as a motivating tool in the educational context, is because I am convinced that it adapts to the needs and requirements of new generations of students, as well as the skills required for the 21st century. This study aimed to evaluate the impact of Guadalingo on learning, motivation, overall satisfaction, and as well as in the development of digital skills of the students enrolled at the West University of Timișoara. This quasi-experiment was conducted over 3 academic years, from 2021 to 2024, and both qualitative and quantitative instruments were applied. The results showed a significant improvement in engagement, flow, the feeling of well-being, autonomy, and increased attention span, and support the conclusion that the use of Guadalingo is fun and motivating for students and facilitates Spanish language acquisition.

Keywords: engagement; flipped learning; flow; gamification; higher education;

Introduction

In recent years, the gamification strategy is increasingly used in the educational system to enhance student engagement and motivation. By integrating game mechanics and strategies (video game, role-playing game, board game, etc.) into a non-game environment, such as an educational environment, gamification aims to motivate and inspire students to actively participate in their learning journey. This strategy has the potential to transform the traditional education system by stimulating students' intrinsic motivation, generating a dynamic and engaging learning experience.

Beginning of the 21st century, the process of teaching-learning-assessing foreign languages has become increasingly technology-oriented. This phenomenon is due to the new needs of learners, called by researcher Marc Prensky in 2001 "digital natives". They

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feel comfortable with technology and electronic devices from an early age and consider technology to be an integral and necessary part of their lives. They communicate and learn mainly through electronic devices and social networks.

The educational systems, when based on conventional teaching methods, often struggle to capture the attention of "digital natives". Gamification offers solutions for stimulating attention, engagement and developing a sense of achievement and progress by incorporating gamification-specific elements (e.g.: narrative, aesthetics, objectives, missions, instant feedback, rules, cooperation, competition, sanctions, rewards, levels, role-playing, etc.). Therefore, dynamic and interactive learning environments will be created, motivating students to actively participate in their own learning process. From fostering a sense of community and collaboration to promoting critical thinking and problem-solving skills, gamification has the potential to transform the way students connect with the subjects they study. As a result, this strategy develops the skills needed for the digital age, preparing students for the job market.

Gamification-related motivational theories have a neuroscientific explanation. Experts have stated that when the learner feels good while performing tasks, he or she releases a number of neurotransmitters such as dopamine, serotonin, acetylcholine, oxytocin and endorphin which activate the three cognitive processes: motivation, attention and memory. It is these three cognitive processes that help to increase academic performance and improve learning, eliminating lack of concentration, uncomfortable classroom climate, demotivation, etc. This is reinforced by Francisco Mora's statement: "Without emotion there is no curiosity, there is no attention, there is no learning, there is no memory" (2014, p. 65). Also, according to Burns (2012), inhibitory neuromodulators can be released in the brain that block the mechanism of forming new connections if the learning context is unpleasant. In this case, it is very important for the teacher to correctly design the gamified system, so as to provoke in the student a series of positive emotions such as enthusiasm, surprise, and triumph over the challenge.

The quasi-experiment described in the current article was implemented over 3 academic years (from 2021 to 2024) in order to observe the impact of gamification in learning Spanish in higher education. I would like to mention that I used the gamification strategy in the review activities in order to deepen the previously acquired knowledge. On the other hand, to accelerate the learning process of Spanish, the students who wanted to participate in the quasi-experiment completed 20 missions, A2 level, in *Guadalingo,* as homework. Specifically, the objectives of this study were: (1) to identify the impact of the video game *Guadalingo* on the acquisition of Spanish as a foreign language in relation to flow, academic performance, and behavior of the students; (2) to evaluate the students' perspectives on learning Spanish through *Guadalingo*.

The reason why I decided to verify the effectiveness of gamification as a motivating tool in the educational context is because I am convinced that it adapts to the needs and requirements of new generations of students and the skills needed for the 21st century. It is important to emphasize that for a successful implementation of gamification, it is

necessary that it be constantly improved with new strategies or methodologies, that it is in accordance with the educational objectives and students' needs, that there is a prior design of the gamified system and, most importantly, that the teacher has digital skills and knowledge related to gamification in order to achieve effective learning.

Theoretical background

The term *gamification* first appeared in 2008 and has gained increasing relevance since 2010 (Deterding et al., 2011; Seaborn and Fels, 2015). Unlike games, gamification is characterized by its serious purpose. Definitions of gamification vary and usually focus either on the elements and mechanics of the game, or on the game process and playful experiences in serious contexts. Game elements are, for example, levels, points, badges, leaderboards, narratives, avatars, missions, challenges, feedback, progress, diplomas, rewards, penalties, collaboration, competition, timing, etc. (Zainuddin et al., 2020). Deterding et al., (2011, p. 2) define gamification as "the use of game elements in non-game contexts". Kapp et al., (2014, p. 54) highlight the use of "game-based mechanics, aesthetics and thinking to engage, motivate and promote learning and problem-solving". Zichermann and Cunningham (2011, p. 14) explain this concept as "the process of game design and game mechanics to generate engagement and problem solving". Rodrigues da Silva et al. (2019) mention that gamification emerged to "increase an individual's engagement, motivation and attitude by using games in non-game contexts".

Imma Marín (2018, p. 91) stated that gamification can completely transform the classroom by adding game-like elements to the school/university curriculum. It is only necessary that all students enter the game or be drawn in, little by little. In the field of education, platforms such as *Guadalingo, ClassCraft, Class Dojo, Toovari, Kahoot!, Blooket, Duolingo, etc.* have been created to turn learning into a challenge, where each student has a mission and chooses his/her own itinerary, visualizing his progress. According to Hamari et al., (2014), gamified activities aim to influence student behavior while increasing the enjoyment of learning, academic performance, and motivation of students.

García Muntión y Monta Seisdedos (2024) define the concept of gamification as "the strategic use of elements and dynamics inherent to games and their culture (aesthetics and ways of thinking) in non-game contexts (marketing, education, communication, etc.)". In relation to education, it is understood as "the strategies for the intentional use of game components to enhance learning by increasing attention, participation, and motivation. In this case, the goal is learning, and what is incorporated from the game is reinforcement" (p. 14).

Guadalingo is a virtual experiential learning platform created by Edinumen Publishing House in 2016. Is designed as a video game that allows learning Spanish in an immersive environment. It is aimed at teenagers, young adults and adults and can be used from various devices (computer, tablet or mobile phone) with an Internet connection, although to access it is necessary to purchase a license. The objective of the video game is to complete the missions of each level, which take place in different locations of a

fictional Spanish-speaking city (Díaz Bravo, 2019, p. 64). Its name is inspired by that of numerous cities that begin with the Arabic prefix *Guada-*, followed by *-lingo* (which refers to the language).

Guadalingo is an app used to improve the learner's motivation and social behavior, enriching the learning experience: the more Spanish is practiced, the more fun, rewards and the feeling of learning is more significant. The student will be able to create and customize their avatar, access new content as they progress in the game, receive rewards, give gifts, redecorate their home, visit their friends, all while learning and practicing Spanish. Since learning is linked to experience, this teaching concept illustrates Edinumen Publishing House's principle according to which the best way to learn a foreign language is in an immersive situation, traveling to a foreign country and interacting with locals.

Guadalingo enhances the sense of immersion by creating learning environments that allow the student to communicate and practice the language. Living in a Hispanic country is recreated thus accompanying the study of the Spanish language with opportunities for interaction, socialization and progress.

The platform consists of levels A1, A2 and B1. Each level includes 25 teaching units or missions, as they are called in the game, which are described at each level, along with the functional, grammatical and lexical content covered. Its contents also follow the Curricular Plan of the Cervantes Institute, as well as the descriptors of the American Council on the Teaching of Foreign Languages.

Díaz Bravo (2019, p. 64) states that its use can be very varied, either as a complement to face-to-face Spanish classes, as a substitute for the exercise book, or to put the flipped classroom methodology into practice, as it is possible for the students themselves to prepare content through the video game prior to the face-to-face class.

Through the *Learning Journal*, the student has to overcome the tasks presented by the game in different interactive scenarios that simulate real-life situations. The types of activities are varied and all skills are practiced through meaningful activities. At the end of each mission, and depending on the results obtained, the student will be able to access new complementary exercises depending on the educational content to be reinforced. The student's work will be reflected in their *Learning Journal* and *Learning Dictionary* as he or she discovers new vocabulary during the different challenges.

The teacher can create learning spaces (e.g. socialization spaces, monitoring spaces, etc.) within this digital platform in a simple, intuitive and accessible way both inside and outside the classroom. This innovative solution enables the guidance of student learning in a fun, motivating and truly effective environment, giving the teacher the tools to personalize the Spanish language classes. The platform allows for easy, dynamic and real-time progress tracking and assessment of students; creating tasks and activities assessed through collaborative activities, group conversations, discussion forums; adding your own content (presentations, documents, videos, images).

In terms of *Guadalingo's* features and functions, missions will unlock as they are successfully completed. Students can check, in real time, in the *Learning Journal,* which missions have been successfully completed and which ones they still need to complete. In addition, they can consult the theory of each mission and the teacher's suggestions or instructions. The teacher can reorganize the educational content that is being worked on to create his/her own itinerary or to adapt it to the curriculum or textbooks, assign deadlines to the missions that students have to complete, and keep a close track of each student's work. Moreover, the progress bar of missions and the different tasks completed allow the student to be aware of his or her own learning, which favors the emergence of metacognitive strategies and long-term learning (Calvo-Ferrer, 2017).

Regarding the type of activities, in each didactic unit or mission of the game there are tasks characteristic of video games whose objective is language teaching-learning, for example: puzzles (which consist in ordering the words of a sentence or fragments of letters), quizzes (which include activities with automatic answer: word relationships, true or false answers or multiple choice), dialogues, simulations of everyday situations, obtaining and using objects, etc.

In terms of skills, all missions contain short written messages that can be heard and that contribute to improving the skills of understanding written and auditory messages. For example, within the game there are numerous simulated dialogues between the student and the characters in the game. In addition, students can improve their written expression skills through the tasks they send to the teacher or through written interaction via chat with other colleagues. They can also practice oral communication skills through activities that involve voice recording. It should be noted that oral interaction between students is only possible if the teacher has previously assigned such an activity to them.

As for the lexicon, *Guadalingo* has a *Dictionary* containing all the vocabulary found in each mission, and by clicking on those words, the student can listen to the pronunciation and read the definition of those words, adapted to the student's level in order to understand it. In addition, learning the lexicon is achieved both thanks to the numerous vocabulary activities and the impressive semantic field of clothing, accessories and food, with which the student can personalize and energize his avatar.

Grammatical aspects are practiced through a wide range of multiple-choice activities, but especially through simulated real-life conversations. On the other hand, in the *Theory* section, students can consult the explanations and other aspects related to the grammatical contents that appear in each mission. The feedback is automatic and immediate and unlimited attempts are given to the student until the correct answer is obtained. See Figure 1. *Guadalingo's* multiple-choice activities below as an example.

Figure 1

Guadalingo's multiple-choice activities. (Own source)

The gamification elements that can be observed in the *Guadalingo* video game are: background music, sounds that are emitted when a wrong or correct answer is chosen, game aesthetics, avatar customization, the feeling of immersion, solving missions, instant feedback, socialization between players, progress, stimulating emotions, obtaining rewards and prizes, etc. When successfully completing missions, students receive coins as a reward with which they can purchase a much better house, furniture, clothing, accessories, food, etc. In addition, *Guadalingo* also features games such as *Guess Who's Who?* and *The Hangman*. All these playful elements create a sense of satisfaction in students through the desire to experience that "happiness" again by completing new missions or games (Díaz-Bravo, 2019, p. 67).

Everyday life areas are simulated: the avatar's home, educational institution, restaurant, supermarket, travel agency, canteen, office, museum, cinema, market, hospital, shops, park, etc. There are socialization areas where students can play with each other and interact through real-time chat. Thus, *Guadalingo* has many elements of the virtual world: the avatars can teleport to different areas and interact with other avatars in immersive situations. See Figure 2. *Guadalingo's* map below as an example.

The examples provided above show that *Guadalingo* is a well-designed highly effective and fun Spanish language learning platform that can be easily adapted to different learning programs, textbooks and educational contexts for A1, A2 and B1 levels.

Figure 2

Guadalingo's map

Source: https://www.apkmonk.com/app/com.bigbangbox.guadalingob2c/

Erhel and Jamet (2013, p. 164) argue that knowledge of the correct answer improves memorization and cognitive processes during learning. This type of feedback is found in *Guadalingo*, unnoticed, since, for example, in a conversation with a virtual character, the student must complete an activity consisting of selecting the appropriate options to correctly form a sentence from a grammatical point of view. When this task is completed correctly, his avatar repeats the correct sentence and integrates it into his dialogue (it appears in a written vignette), so it is no longer a feedback message, but is integrated into the conversation. Another illustrative example can be found in a mission in which students have to learn to write a formal letter: after several activities in which they must order the fragments of a text, the complete letter is shown, thus offering feedback consisting of the visualization of the correct answer, which at the same time constitutes valuable input for the improvement of written expression (Díaz-Bravo, 2019, p. 67). See Figure 3. *Guadalingo's* feedback below as an example.

Guadalingo continues the series of games that have used virtual worlds to successfully teach Spanish by exploring the benefits of the students' sense of immersion in environments that replicate real life (Adams et al. 2011; Melchor-Couto 2011; Canto 2012; Jáuregui 2012; Robles and Díaz-Bravo 2017).

It should also be noted that an experimental research carried out at the University of Salamanca and presented by José Miguel Sánchez-Llorente (2018) in the Edinumen webinar "Does gamification influence the teaching-learning process of Spanish students in immersion?" illustrates positive results following the implementation of the gamified video game *Guadalingo*. The research was applied to a group of 301 students who studied Spanish at the University of Salamanca (therefore, in an immersion context).

Figure 3

Guadalingo's feedback. (Own source).

The findings have shown a very positive impact in terms of the development of the degree of affectivity and perception of learning by the students who used *Guadalingo*. They were much more willing to be tested voluntarily at the end of the course (83% of the group using *Guadalingo* took the SIELE exam, compared to 28% of the control group), due to the loss of fear of being tested, and perhaps also because they felt more involved in their learning of Spanish and, therefore, more motivated. These results are in line with studies on the use of virtual worlds in foreign language teaching, which also show the development of the affective component (increased self-esteem, positive perceptions of one's own learning, loss of fear of speaking in the target language) (Chen 2016; Robles and Díaz Bravo 2017, Díaz-Bravo, 2019).

Methodology

This investigation proposes the following methodologies:

• Simulation method. It will activate students cognitively and affectively by simulating real-world situations. In this way, students can learn from their own mistakes, evaluate the effects and make inferences from their own actions. In this quasi-experiment, the gamified video game will be used to create an immersive context, where students will investigate and complete a series of missions and challenges.

• Learning through discovery, exercise, and problem-solving. A series of tasks will be designed with the aim of practicing the knowledge acquired but also of assimilating new information in order to create meaningful learning. I have found that *Guadalingo* stimulates learning through discovery; thus, students become autonomous and develop a series of skills by overcoming the missions. By providing them with the necessary information to complete the missions, the teacher will be a guide in their learning process. In addition, the missions have a progressive degree of complexity; in this way, students' motivation increases as they progress in solving them.

Participants

The context of this study was the implementation of an gamified video game in the subjects *Spanish language*, *Translation Skills*, and *Practical Spanish language course* of the Department of Modern Languages and Literatures, Applied Modern Languages and Modern Languages and Literatures, of the West University of Timişoara during three academic years (from 2021 to 2024). A total of 89 female and 10 male students, with ages between 19 and 22 years, participated in the experience and voluntarily completed the questionnaires and interviews. The students were informed from the beginning about the research.

Instruments

In conducting this experiment I used quantitative and qualitative techniques. The data collection techniques used were: interview (15 students were interviewed), document analysis, field diary, audio recording, and questionnaires.

- Interview

The structure of the interview included the following aspects: recounting the experience following completing the 20 missions in *Guadalingo*, mentioning the skills developed through the video game, specifying the strong and weak points of *Guadalingo*, etc. The interviews were in the form of natural conversations and meant to generate a pleasant and trusting climate in which the interviewees felt comfortable and relaxed while speaking.

- Document analysis

In this quasi-experiment, I was particularly interested in the analysis of formal and administrative documents (the subject project, the didactic project), checking the accuracy of solving the missions, and assessing the use of *Guadalingo* video game.

- Field diary

In the field journal I wrote down student's feelings, reactions, and impressions after completing the missions. I also added some ideas and reflections following the spontaneous conversations and interviews with the participants. This field diary was the starting point in the development of the investigation.

- Audio recordings

I audio recorded the students during the interviews and spontaneous conversations with the aim of presenting the behaviors, reactions, attitudes, and impressions of the students after playing *Guadalingo*.

- Questionnaire

I created two questionnaires in Spanish by using the Google Forms tool. The first questionnaire requested the students' permission to audio record the interviews and the spontaneous conversations, ensuring their anonymity among colleagues.

The second questionnaire was adapted from the *Game Experience Questionnaire* model to assess students' perception of the gamified video game and consisted of 11 closed-ended questions, with two answer options (yes or no) and one open-ended

question. These answer options were chosen because they did not require a consistent effort on behalf of the respondents. This questionnaire was completed after each student had completed a minimum of 20 missions and included the following evaluation scales: efficiency, autonomy, stimulation, immersion, and the generation of positive and negative emotions.

The Game Experience Questionnaire (GEQ) is a standardized instrument developed to measure players' experiences during or after interacting with digital games. It was originally designed by researchers in the EU FUGA project (2005–2008), which focused on measuring the fun and user experience in gaming environments. The GEQ identifies the psychological and emotional responses of players by assessing multiple dimensions of game experience such as immersion, flow, competence, positive and negative affect, tension and challenge.

Law et. al. (2018) conducted a study in which they made a systematic literature review of 73 publications, analysing how and why the GEQ and its variants have been employed in current game research. They concluded that "the GEQ has become one of the most prevalent instruments to measure different key dimensions of the player experience" (p. 264). Another research conducted by Rebhi et. al. (2023) focused on adapting and validating the GEQ for Arabic-speaking populations. The study confirmed the questionnaire's reliability and validity, supporting its applicability in diverse educational and cultural settings: "the instrument appeared to be valid and reliable tool for assessing game experience in Arab countries". Therefore, I applied this questionnaire because is widely used in studies with different game genres, and it has a multidimensional structure based on solid theoretical and empirical foundations, featuring well-constructed dimensions.

Results

Assessment

In order to accelerate the process of learning Spanish as a foreign language and to deepen grammatical and lexical notions, it was desired to observe the impact of the gamified video game *Guadalingo*. DELE A2 and B1 level model exams, taken from the official website of the Cervantes Institute published in 2020, were used to assess students' Spanish language level and skills following the application of gamification, which was used as a strategy to review previously acquired notions. Such an exam consists of three tests: comprehension of a written text, comprehension of an oral text and written expression. The first two tests each contain four activities, and the last one, two activities. Due to limited time, it was decided that students would have to solve one activity for each test.

In the 2021-2022 academic year, first year students, majoring in Applied Modern Languages, benefited from a total of 3 gamified sessions during the second semester. At the beginning of the first semester, the DELE model exam, level A2, was applied in order to observe the students' Spanish language level, and at the end of the second semester,

the DELE model exam, level B1, was applied. The results obtained by the students in the assessment tests showed an improvement in the level of Spanish, even though the difficulty of these tests was gradually increasing. The Table 1 below shows the arithmetic mean of the points obtained following the two assessments:

Table 1
Students' evaluation (academic year 2021-2022). (Own source).

Applied Modern Languages, first year, subject Spanish Language, academic year 2021-2022	
Initial assessment (level A2)	37, 28 points
Final assessment (level B1)	84,96 points

In the academic year 2022-2023, first-year students, majoring in Applied Modern Languages, experienced a total of eight gamified sessions over two semesters. In this way, a more complex and thorough assessment could be carried out as the courses with these students took place weekly (four hours per week). In addition, at the beginning of the first semester, the same DELE exam model, level A2, was applied for both the initial and continuous assessment in order to observe the differences in points, and at the end of the second semester, the DELE exam model, level B1, was applied. The Table 2 below shows the arithmetic mean of the points obtained from the three assessments:

Table 2
Students' evaluation (academic year 2022-2023). (Own source).

Applied Modern Languages, first year, subject Translation Skills, academic year 2022-2023	
Initial assessment (level A2)	63,71 points
Continuous assessment (level A2)	85,47 points
Final assessment (level B1)	90,16 points

During the academic year 2023-2024, students from the Applied Modern Languages and Modern Languages and Literatures majors experienced 14 gamified sessions over the two semesters. At the beginning of the first semester, the same DELE exam model, level A2, was applied for both initial and continuous assessment in order to observe the differences in points, and at the end of the second semester, the DELE exam model, level B1, was applied. The Tables 3 and 4 below show the arithmetic mean of the students' results obtained before, during and after the application of gamification.

Table 3
Students' evaluation (academic year 2023-2024, Applied Modern Languages). (Own source).

Applied Modern Languages, first year, subject Translation Skills, academic year 2023-2024	
Initial assessment (level A2)	35, 98 (3) points
Continuous assessment (level A2)	84, (1) points
Final assessment (level B1)	81, 4 points

Table 4
Students' evaluation (academic year 2023-2024, Modern Languages and Literatures). (Own source).

Modern Languages and Literatures, first year, subject Practical Spanish language course, academic year 2023-2024	
Initial assessment (level A2)	40, 42 points
Continuous assessment (level A2)	75, 23 points
Final assessment (level B1)	76, 17 points

Questionnaire

A questionnaire was developed in order to evaluate the degree of the satisfaction of students in the academic years 2021-2022, 2022-2023, and 2023-2024 regarding the *Guadalingo* video game. This questionnaire was completed after each student had completed a minimum of 20 missions and consisted of eleven closed-ended questions, with two answer options (yes or no) and one open-ended question. The variables used for the evaluation are: motivation, flow, the usefulness of learning activities, the feeling of well-being and autonomy, increased attention span, the development of critical capacity, and the design of the video game. In general, the evaluation has been quite positive under all aspects. Next, I will present the 12 questions from the questionnaire and the students' answers. See Table 5. Questionnaire - evaluation of the degree of satisfaction of students regarding *Guadalingo*.

A total of 99 subjects completed this questionnaire. The questions were as follows:
Q 1: Was your experience with the *Guadalingo* video game enjoyable?
Q 2: Did you learn Spanish with the help of *Guadalingo*?

Q 3: Was the interface of the *Guadalingo* video game easy?

Q 4: Were the teaching activities presented useful?

Q 5: Did the learning activities motivate you?

Q 6: Did you lose track of time while completing the missions?

Q 7: Did you feel frustrated while completing the missions?

Q 8: Did completing the missions stimulate your imagination?

Q 9: Did the instant feedback motivate you to continue your activities?

Q 10: Did you feel autonomous while completing the missions?

Q 11: Did the rewards motivate you?

Figure 4

Questionnaire - evaluation of the degree of satisfaction of students regarding Guadalingo. (Own source).
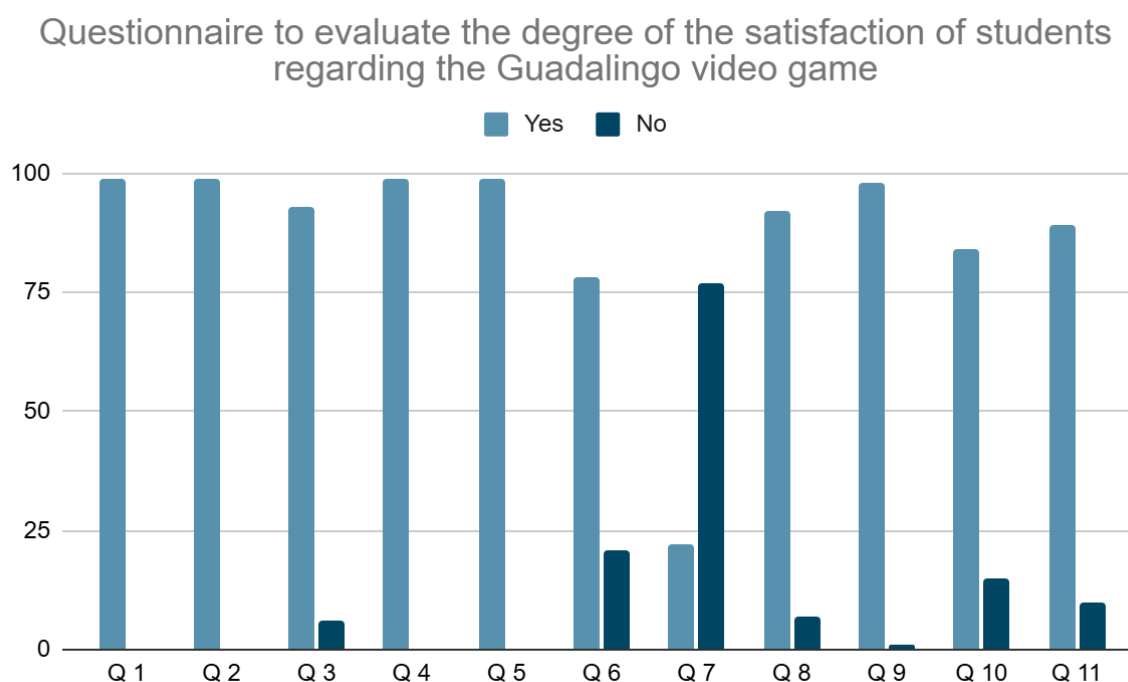
Q 12: What would you change or add if you were the creator of the video game *Guadalingo*?

Some of the students' responses were as follows. See Figure 4. Students' answers in the questionnaire:

- *Sometimes the game was a bit slow, but other than that, it was a very nice experience and I want to repeat it.*

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- *I don't think it needs any changes because it's a very educational and engaging game. It's addictive, I can say that.*
- *I would do other types of activities too.*
- *I don't think I would change anything, because the interface is easy to use and everything is well explained so that, regardless of your level of Spanish, you can understand what you need to do.*
- *I really liked Guadalingo because it is interactive, fun and easy. I liked the design but from time to time it was a little slow. I think if I were the creator of Guadalingo, I would try to introduce new missions and make the game run faster.*
- *I wouldn't change a thing. I enjoyed every mission because I learned a lot of new words and I even feel more confident when speaking Spanish. To be honest, at first I didn't think I would improve so much, but I'm glad I can finally say that I've reached another level of knowledge. Thank you very much!*
- *I think it's a very interactive and interesting game. I also like the idea of learning a foreign language this way.*
- *If I were the creator of the game Guadalingo, I would add a final exam that includes everything I learned after completing each mission.*
- *I would change the fact that it's very slow. Otherwise, I really enjoyed it and found it very interactive and easy to learn.*

Figure 5

Students' answers in the questionnaire. (Own source).

Si fueras el creador de Guadalingo, ¿qué cambiarías o agregarías?
99 de răspunsuri

-

Nada

No cambiaria nada

nada

A veces el juego funcionaba un poco lento, pero aparte de eso, fue una experiencía muy agradable y quiero repetirla. 😊

No creo que necesita ningun cambio, porque es un juego muy educativo y cautivador. adictivo puedo decir.

No se que puedo agregar mas porqué todo fue muy útil si eficiente en ayudarme

si yo fuera el creador del guadalingo, no creo que cambiaría nada porque es un juego muy interactivo e interesante. Creo que está muy bien hecho y pensado.

Interview

The following will present some of the students' perceptions of the impact of the gamified video game *Guadalingo* on the acquisition of Spanish as a foreign language:

Student no. 3 - *I liked Guadalingo! I especially liked it because we also had a theoretical part from which we could learn vocabulary and grammar in order to solve the next mission. I liked that very much! And I also liked the fact that if you clicked on a command in the game, it would tell you what it was called. I actually looked over the theory before I did a mission and when I did it, it was like this, like a sort of recap. Mmm …* (the difficulty of the missions) *it was medium. If I'd read before, like I said I read, then it was much easier. Initially I was solving them without reading and then they seemed harder to me, but after reading, they were easier.*

Student no. 8 - *Yes, at that time I really didn't know very much and from there I learned a lot of expressions from Guadalingo. They were conversations and they really helped me to see certain structures. It really helped me!*

Student no. 5 - *I liked it (Guadalingo) because every time I made a mistake it gave me a chance to correct it until I got it right. It really helped me! I improved my vocabulary and I liked it!*

Student no. 9 - *I found Guadalingo interesting! Personally, I liked it and yes, it helped me learn Spanish because there were many concepts that weren't so easy. Yes, I'm glad I ended up learning them! I remember that I used to get confused when expressing the directions "left" and "right" and I also used to get confused when formulating sentences. I didn't always place the words in a sentence correctly. But I think it helped me know the concepts that used to confuse me.*

Student no. 12 - *Guadalingo helped me a lot and I still remember a lot of words. [...] Guadalingo helped me a lot with grammar and vocabulary. I remembered a lot of words and I also took notes. [...] through gamification I accumulate information that I didn't know and at the same time I recapitulate what I learned.*

Student no. 2 - *I liked it* (the *Guadalingo* game)*, I liked it because it was a game similar to The Sims and you could make your own house. Also, I could see the names of every object in the house in Spanish. Every command in the game was in Spanish and it helped me learn the language.*

Student no. 6 - *It was very interactive. I really enjoyed it! I learned a lot of vocabulary, but also a lot of grammar. The missions were not very difficult, and I even realized that I could solve them. I liked the exercises where we had to put the words in the correct order and that was very interesting.*

Discussions

From the results obtained, it can be noted that *Guadalingo* is a very useful didactic resource and produces a practical approach to subjects that are essentially theoretical.

This fact causes the interest in and dedication to their study to grow in the students since they also have fun while learning.

The development of critical thinking or the ability to solve missions is manifested in the difficulties or impediments when it comes to overcoming challenges, ordering words in a sentence, selecting between the true and the false, between the relevant and the secondary, and between the true clues and those that mislead.

The students who participated in this experiment, which lasted 3 years, were not used to obtain learning through innovative resources, which are rather absent in traditional classes. In addition, the proposed gamified activities combined with the *Guadalingo* video game, complemented by the fun factor, causes the contents to be learned and assimilated in a more significant way.

Analyzing the answers given by students in questionnaires and interviews, it can be seen that *Guadalingo* is a useful educational tool. It helped them to learn and/or review the contents of the subject, and they really enjoyed playing the video game because it develops their self-confidence and communication skills in Spanish. The students also mentioned that they could evaluate their knowledge in a playful manner, without being afraid they might give a wrong answer. In general, positive aspects related to the effectiveness of the *Guadalingo* video game predominated. Some negative aspects were that the video game was running slow and that the students would prefer the activities present in the missions to be more diversified.

The video game developed student autonomy by allowing students to work at their own pace and without the teacher's help. They can quickly and easily access the theory and work through it to successfully complete the missions. Therefore, *Guadalingo* is ideal for flipped classes, extra homework, or autonomous reinforcement learning.

Students learn vocabulary and grammatical structures in real-life situations—going to the market, looking for accommodation, meeting people, etc.—which fosters meaningful memory, as words and expressions are associated with specific contexts.

Ramírez, J. A. and Moreno, T. A. (2022) in their master's thesis they developed an assessment tool focused on reading comprehension within the virtual learning environment of *Guadalingo*. Six key evaluation criteria are established: design and aesthetics, pedagogical conditions, user roles, operational functions, reading comprehension development, and assessment.

According to the authors (2022, p. 105) of the study, criteria such as design and aesthetics, user roles, and operational functions are fulfilled within *Guadalingo*. Criteria such as pedagogical conditions related to reading comprehension and development reading comprehension are partially fulfilled within the video game. The authors justify that the activities are not communicative, are limited to stimulus-response exercises, and that there is no space for analysis and/or reflection. They add that the specific needs of learners are not considered when setting learning objectives. Furthermore, they state that the reading comprehension activities do not include intercultural dialogue activities based on the text, and that literal reading comprehension is worked on rather than

inferential or critical reading. The results validate the usefulness of the instrument to improve the pedagogical quality of *Guadalingo*.

Another case study conducted as part of a master's thesis by Lulu Wang (2020) verified the effectiveness of the *Guadalingo* video game. The participants in this experiment were 30 Chinese students residing in Spain during the 2019/2020 academic year at the Polytechnic University of Valencia. These participants were divided into two groups: an experimental group, and a control group. The experimental group consisted of 16 participants, and the control group consisted of 14 participants. These students had a Spanish language level between A2 and B1, were aged between 22 and 25, and the predominant gender was female (26/30). The students participating in the experimental group played the video game *Guadalingo*. In this sense, the students had to complete the first five teaching units or missions.

Furthermore, Google Forms was used to conduct the tests and the final satisfaction survey. Two tests were administered: one to assess the initial level, and another to assess the final level of Spanish language. The experimental and control groups took two language tests. Students who played *Guadalingo* improved 18.71% compared to the initial test. The control group remained at a similar level and only showed a slight improvement of 0.68%. The academic results from both tests (initial and final level) suggest that *Guadalingo* had a positive influence on the students' Spanish language development.

This study also sought to determine the satisfaction of students who participated in the experiment. The questionnaire consists of 10 closed-ended questions using the Likert scale method. The score is given out of 5 points, and each question is summarized into an average score for comprehensive comparison. 1 means very negative and 5 means very positive. Based on the results, the 16 members of the experimental group who participated in the questionnaire were very satisfied with the *Guadalingo* video game and generally agreed with its use and mechanics. Furthermore, it should be noted that the average score for each question in the questionnaire was over 4 points. These responses indicate that participants enjoy the immersive learning environment offered by the *Guadalingo*.

This video game creates contextualised learning, increases motivation, stimulates autonomy, reduces the fear of making mistakes when practising a new language and improves cognitive skills (such as meaningful memory, attention, decision making, strategic thinking). Moreover, the scenarios take place in Andalusian villages, so the student also becomes familiar with local culture and customs. This reinforces intercultural competence, which is essential for language acquisition.

Conclusions

Once the results have been presented, essentially valuing the opinions of the participating students, I can verify the acceptance and success of what has been learned through the gamification methodology, specifically with *Guadalingo*. The high level of positive

responses to the question of whether they would repeat the experience in class is also worth mentioning. It is an activity that has pleased the majority of the students, enhancing their interests, abilities, and skills.

Based on the concept presented by Bruner (1984), it is necessary to highlight the idea that students should always be provided with a feeling of enthusiasm while learning. Students must become the protagonists, based on previous knowledge and on their preferences, thus achieving significant learning.

Regarding the usefulness of the study, the results are effective for representatives of the academic environment who research the topic addressed in this article. The limit of this research is the small size of the sample, which is due to my intention to evaluate the impact of *Guadalingo* in some of the groups I teach Spanish to. Also, I have to mention that I work with each group of students differently, depending on the group's level of the Spanish language and on the curriculum.

With respect to the future directions, it is important to emphasize that, although the results of this study provide data that demonstrate the effectiveness *Guadalingo*, it would be interesting, in the future, to be able to evaluate the longer-term effects with a larger number of participants so as to allow a more detailed evaluation of *Guadalingo*. I would also like to test the impact of other video games for learning Spanish as a foreign language. Also, further research can include a comparison between *Guadalingo* and video games used with regard to teaching other foreign languages.

In conclusion, the use of the gamified video game *Guadalingo* in university can have benefits in the motivation, flow, and acquisition of student knowledge, and can be successfully applied together with other strategies of active and traditional learning. The game is designed to make the student feel "inside" the language: he/she learns while exploring real-life scenarios, interacting with virtual characters and solving missions.

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Searching for the Right Path: Segregation, Integration, and Inclusion

Csilla ANTAL[•]

Abstract

The research examines the three most well-known educational strategies concerning Roma children from theoretical and practical perspectives. Numerous studies and articles widely discuss segregation, integration, and inclusion; however, their practical implementation in everyday life often goes beyond the frameworks presented in academic literature. Between 2020 and 2024, a research project investigated these three educational strategies with a strong emphasis on practical considerations. The primary focus of the academic work was on the factors influencing the institutional attendance of preschool-aged Roma children in Harghita County. Data was collected from four major zones of Harghita County: Odorheiu - Secuiesc, Miercurea Ciuc, Gheorgheni, and Cristuru Secuiesc, where various kindergartens were visited. Segregated and integrated groups were observed, and interviews were conducted with kindergarten teachers and the parents of attending children. The findings revealed that most preschool-aged Roma children in Harghita County are enrolled in segregated educational settings. Integrated education was observed at only two sites: the Ficánka Kindergarten in Odorheiu-Secuiesc and another anonymous kindergarten in the rural region of Odorheiu-Secuiesc. The results highlighted unique perspectives: we learned about the challenges faced by rural kindergartens operating in segregated and integrated groups and gained first-hand insights into the difficulties outlined by the educators themselves. At the Ficánka Kindergarten Center in Odorheiu-Secueisc, segregated and integrated groups are present; however, inclusion efforts are still in their early stages. The long-term goals of the Ficánka Kindergarten include implementing a fully inclusive strategy, although such a goal requires complex infrastructural development. We did not find any kindergarten within Harghita County that currently embodies a fully inclusive educational approach. From a practical perspective, inclusion remains uncharted, yet pursuing long-term inclusive goals is unquestionably worthwhile.

Keywords: segregation, integration, inclusion, romology, institutional attendance

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Introduction

The Charter of Fundamental Rights of the European Union, published in 2000, prohibits discrimination, including that based on racial and gender identity. Furthermore, the Treaty on the Functioning of the European Union empowers legislators to adopt legal measures to eliminate such forms of discrimination.

Article 21 of the Charter of Fundamental Rights of the European Union clearly states the prohibition of discrimination:

> "(1) Any discrimination based on any ground such as sex, race, color, ethnic or social origin, genetic features, language, religion or belief, political or any other opinion, membership of a national minority, property, birth, disability, age, or sexual orientation shall be prohibited.
>
> (2) Within the scope of application of the Treaties and without prejudice to any of their specific provisions, discrimination on grounds of nationality shall be prohibited." (Charter of Fundamental Rights of the European Union, 2000, p. C 364/12´).

Nevertheless, reality paints a different picture. Across Europe, Roma children living in deep poverty must struggle significantly to find their place in everyday society. No matter the life situation, a Roma child is still, unfortunately, at a disadvantage compared to children belonging to the majority population.

Discrimination is not always easily identifiable, yet children from minority backgrounds often bear the "mark of difference." Their chances of entering the education system, achieving strong academic results, continuing their studies, and eventually building a prosperous professional career are substantially lower than those of their majority peers.

Defining the Concepts of Segregation, Integration, and Inclusion

According to current sociological perspectives, most society approaches Roma communities through three key concepts for promoting equal opportunities: segregation, integration, and inclusion. But what exactly do these terms mean? It is important to clearly and precisely define each of these concepts to gain a deeper understanding of this complex issue.

Let us begin with segregation. There are various schools of thought and theoretical approaches to the concept of segregation. Hungarian sociologist Ildikó Bihari, paraphrasing the work of several academic authors, defines segregation as follows:

Academic literature distinguishes between two types of segregation: exclusion (external separation) and self-separation. Exclusion refers to a deliberate, external intervention that creates separation. One form of this is intra-school segregation, such as separation between school tracks or classes, within-class divisions, extracurricular grouping, or assigning Roma students as private learners. Another form is inter-school segregation within the school system, including separation between schools in different

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localities, institutional-level segregation, or the unjustified categorization of Roma children as disabled or students with special educational needs (SEN)(Bihari, 2021, p. 70).

This approach distinguishes between two types of segregation: external segregation and voluntary segregation. External segregation occurs as a result of external intervention: for example, Roma children are taught in separate classes from their majority peers.

Moreover, in Harghita County, it is even more common that most schools and kindergartens do not admit Roma students at all. Therefore, Roma children are segregated at the institutional level of education. There are schools and kindergartens established only for Roma children, where every single child is of Roma ethnicity, and we can not find a single class, group, or even a single child who would belong to the national majority in that particular school or kindergarten.

Even today, the children of Roma neighborhoods and settlements are mostly concentrated in a single school in the cities, and even if they are enrolled in a mixed class from the fifth grade onwards, they often study there with non-Roma pupils who are also disadvantaged (Jakab, 2019, p. 122).

Simina Dragos, a Romanian-born researcher with a PhD in educational sciences, has also introduced a new term linked to the concept of segregation: antigypsyism.

Antigypsyism is expressed through the prominence of narratives based on the 'deficits' of Romani students... and through school segregation (Dragos, 2022, p.77). Antigypsyism is a kind of prejudiced attitude of the majority of society towards the Roma. This approach classifies segregation as a prejudice-based educational strategy.

Jack Greenberg, an American civil rights lawyer and legal scholar, links another concept to segregation: the so-called "White Flite" phenomenon. School segregation can be further exacerbated by the behaviours of non-Roma families who move out once their children's schools begin admitting Roma children (Greenberg, 2010, p.53). Greenberg's concept defines segregation as separation based on skin color. As the term "White Flite" suggests, non-Roma families feel superior to Roma families because of their skin color. In Greenberg's approach, segregation is thus a 'legal' form of racism.

Now let us move on to integration and inclusion. Gabriella Papp, a special education teacher and educational specialist, considers integration and inclusion to be broad concepts. The concepts of integration and inclusion are both constantly evolving and changing in meaning. Both are based on value assumptions that seek to enhance the cohesiveness of societies (Papp, 2012, p.13). The words „integration" and „inclusion" share similar meanings but differ in several key aspects. This study (a collaboration of international authors) interprets inclusion and integration from a sociological perspective along the lines of the relationship between the Roma and the non-Roma.

Social integration can be understood as the proactive effort of majority society to create conditions that allow Roma communities to access and participate in societal life. This includes formal actions, such as schools increasing the number of Roma children in

their student body, implementing desegregation programs at the local level, and offering various training initiatives to boost Roma employment. While integration is a prerequisite for inclusion, achieving true inclusion requires the fulfillment of further conditions.

Social inclusion means that members of minority communities feel at home within the majority society. They are not hindered in maintaining their minority identity, and the majority sees them as equal members. With this dual belonging, they experience no barriers in daily life—they have the same chances to obtain employment and the same opportunities in all areas as members of the majority community (Papp, 2012, p.14).

A study published by the Organisation for Economic Co-operation and Development in 2020 interprets inclusion as the opposite of segregation and antigypsyism. This work then identifies initiatives aimed at improving Roma students' inclusion and recurrent challenges, such as segregation in education and anti-gypsyism (OECD, 2020, p.110).

The Library and Information Centre of the Hungarian Academy of Sciences categorizes integration and inclusion as concepts that originate from each other and can only be interpreted in relation to one another. Social inclusion is replacing social integration: programs and processes designed to prevent exclusion and encourage inclusion are developed at the community level (The Library and Information Centre of the Hungarian Academy of Sciences).

Segregation, Integration, and Inclusion in the Field of Education

Education is a field in which all three approaches—segregation, integration, and inclusion—are simultaneously present. However, there is still no clear, evidence-based consensus on which educational model—segregated, integrated, or inclusive—is most effective in the development process of the Roma children.

What distinguishes exclusion, segregation, integration, and inclusion from each other? – Exclusion occurs when students with disability are denied access to education… Segregation is when students with disability are educated separate education settings… Integration occurs when students with disability are placed in mainstream classrooms, but no adjustments take place… Inclusion involves systemic reform and is when students with disability are educated in regular classrooms, alongside their same-age peers (UNCRPD, 2016, p.11).

The long-term goal is to establish a healthy, cooperative, and respectful relationship between the majority society and the Roma community, and the first step toward this is educational integration. However, due to their unique cultural background and specific situation, the Roma require a special approach in several areas of life. To include them without forcing assimilation—and to ensure that the Roma community retains its distinctive values—we must examine the available set of tools, which includes segregation, integration, and inclusion. The three concepts mentioned above are approaches that extend beyond the everyday framework of educational institutions; however, their primary area of application is education.

In 2004, the Romanian Ministry of Education announced its commitment to an educational policy prioritizing equal opportunities. The main objective is to ensure everyone has access to educational institutions and quality education, regardless of ethnic background or mother tongue (Notificare – Nr. 29323/20.04.2004). The document also addresses issues related to improving the education of Roma children and highlights the situation at that time when segregationist strategies were still the most widespread.

In 2007, an official order (Ordinul 1540/19.07.2007) was issued, which stipulated that starting with the 2007–2008 school year, it would be prohibited to establish segregated first and fifth-grade classes consisting exclusively or predominantly of Roma children. The issue's significance is underscored by a follow-up notification in 2010 (Notificare nr. 28463 / 3 March 2010), which outlined further measures and recommendations to eliminate segregation in kindergartens and schools.

Law 198/2023 is the most recent piece of legislation that explicitly prohibits segregation in education and emphasizes the right to access quality education, a right that belongs to every student. On December 6, 2024, a new methodology was introduced, providing a detailed framework for the prevention, monitoring, and implementation of desegregation in schools. It imposes obligations on schools, requiring them to collect data and report annually on segregation-related situations. Educational institutions must also establish a desegregation committee, intervene in cases of segregation, and report on the progress of desegregation efforts at both local and national levels.

Nevertheless, these regulations have yet to be fully implemented, as most schools and kindergartens do not comply with the directives. Segregation remains a factor—whether due to residential patterns or other influences—and unfortunately, it has not entirely disappeared from the educational system.

In 2023, the Social Inclusion Strategy for the Roma Population of Harghita County was published, written by sociologists Tamás Kiss and Andrea Sólyom.

The Strategy was developed with the involvement of other professionals and county-level experts as well, and it maps out the social situation of the Roma population living in Harghita County. It includes real surveys, development plans, and proposed solutions designed to improve the living standards of Roma communities. I contributed to the development of the aspects related to educational strategies. As the data outlined below (based on an accurate survey) clearly shows, segregation remains the most widespread practice in Harghita County.

Table 1
Distribution of Roma Students by Type of Educational Setting

	Harghita County	Cristuru Secuiesc	Odorheiu Secuiesc	Ciuc	Gheorgheni	Toplița
Number of Roma Students	3443	1064	1210	928	217	24
Segregated/Roma Educational Setting (%)	42	78	25	25	44	0
Strong Roma Presence	20	14	8	22	47	0
Integrated Educational Setting	38	8	53	48	9	100
Number of Roma Students (Urban)	922	231	338	145	139	19
Segregated/Roma Educational Setting	58	33	45	3	69	0
Strong Roma Presence	15	57	7	0	11	0
Integrated Educational Setting	27	10	48	97	20	100
Number of Roma Students (Rural)	2521	833	872	733	78	5
Segregated/Roma Educational Setting	40	90	20	32	15	0
Strong Roma Presence	21	4	9	30	58	0
Integrated Educational Setting	41	7	71	38	27	100

Roma Children in Segregated Education

"Education and upbringing provided separately—in a different institution, group, or classroom—for children or students with individual differences determined by social, cultural, or biological factors, apart from most children or students." (Bakos, 1977, p. 729) The study published by authors L. Costache, E. Crai, and Claudiu Ivan introduces two additional subtypes of educational segregation: inter-school segregation and intra-school segregation. While previous studies on school segregation have focused on inter-school segregation (the distribution of students from various categories among different schools), we argue that it is equally important to consider the intra-school segregation side (i.e. segregation within the same school learning spaces)(Costache, Crai, & Ivan, 2024, p. 51).

In Harghita County, inter-school segregation is more common. Intra-school segregation is not an issue, as usually only one school or kindergarten in a given locality is willing to admit Roma students. Over time, due to the so-called "White Flight" phenomenon described above, the institution gradually becomes a school or a kindergarten where only Roma children are present, as the Hungarian and Romanian parents instantly take their children from the given institution.

School segregation of Roma has become one of the most studied disciplines in the field of education in the last 20 years (Varga, 2022, p. 14). Fernando Varga's 2022 study also emphasizes the complexity of the problem; however, the abundance of theoretical approaches has still not resolved the issue in practice.

The segregation of Roma children continues to be a significant issue in education, even though the 2004 notification (Notificare - Nr. 29323/20.04.2004) highlights the harmful consequences of segregation and offers guidance to educational institutions on how it can be eliminated. However, since this document does not carry legal force, segregation remains widespread in the Romanian education system.

According to Eurochild's 2025 report, the level of school segregation affecting Roma children increased in Romania between 2016 and 2021. This further demonstrates that the legal measures taken to reduce segregated education are not being effectively implemented in practice.

There are significant gaps in health, education and welfare outcomes between Roma and non-Roma children in all Council of Europe member States and in every sector, including access to preschool and primary education in Romania. In Romania, the segregation of Roma children in schools has worsened over time, with rates increasing from 28 % in 2016 to 51 % in 2021 (Eurochild, 2025, p. 12).One of the main reasons for this is that many Roma families live in larger, concentrated communities, meaning that children are primarily directed to schools and kindergartens closest to their homes. Additionally, transporting Roma children to institutions in other areas poses logistical challenges, and their limited knowledge of the Romanian language further complicates their integration into the educational system.

Between 2005 and 2015, Romania participated in the Decade of Roma Inclusion, a program aimed at promoting the social integration of the Roma population. This initiative identified four key areas for implementing integration measures, one of which was education. The compared assessment shows that obtaining successes in the Decade implementation depends both on the existence of a proper institutional framework and on the prepared and implemented policies in the four priority areas (Decade of Roma Inclusion Secretariat Foundation, 2010, p. 5).

The National Roma Integration Strategy (2022–2027) also highlights the need for institutions with high percentages of Roma students to implement inclusive education practices. This involves schools and kindergartens becoming open and accessible to all children, regardless of nationality, and adopting curricula that promote cultural

diversity. The explicit goal is to eliminate segregation. If not to eliminate, then at least to actively promote the practical implementation of integration and inclusion.

Measures aimed at accelerating the integration of Roma, preventing and eliminating segregation, taking into account the gender dimension and the situation of young Roma, and establishing core values, as well as intermediate objectives and measurable targets (The National Roma Integration Strategy (2022–2027) , 2021, p. 1) Nevertheless, in many places, these measures are not implemented in practice, and segregation in Roma children's education persists. As a result, educational institutions often fail to provide quality education to Roma students. Among the harmful effects of segregation are the perpetuation and strengthening of social prejudices, which further hinders the integration of Roma communities. For the children, this only intensifies feelings of marginalization. Moreover, a shortage of qualified teachers is frequently an issue in these segregated schools. Segregated education reinforces the sense of social exclusion and contributes to the development of various forms of voluntary segregation among Roma adults. Consequently, Roma children find it more challenging to succeed in communities where the majority is not Roma. Living in isolated communities often makes it hard for them to build trusting, tension-free relationships with members of the non-Roma society.

At the same time, more and more Roma parents are beginning to recognize the disadvantages of segregation. They do not want their children to grow up exclusively among peers with whom they already share the same residential environment. These parents increasingly understand that it is not beneficial for children to face the same social challenges at school or kindergarten that they encounter in their neighborhoods. They often express their desire not to have their children educated in environments where they might be exposed to foul language or harmful behavioral patterns. There are many differences in lifestyle and worldview, even among families living within Roma communities. Often, within the same residential area, families who are willing to take steps toward integration with the majority of society live side by side with families who follow antisocial social patterns in their everyday lives. Families who want to make progress usually have jobs and regularly send their children to kindergarten and school. In contrast, their neighbors may only occasionally send their children to school or kindergarten—not for the sake of the children's development but to receive social benefits. Members of families striving to break out of poverty are often deeply frustrated by having to live in a discouraging environment, and this kind of involuntary mixing continues within the school system in the case of segregated education.Among families living according to antisocial patterns, aggressive behaviors are more common, both within the family and outside of it. One Roma mother I interviewed, who lives her life following conscious steps toward integration, also mentioned that she does not understand how the teachers working at the school in the Roma settlement can tolerate the kind of behavior they experience from some Roma parents. It is common for parents to speak to teachers disrespectfully and aggressively, failing to show them the respect

they deserve. It is commendable that parents striving to break out recognize the harmful effects of group dynamics and wish to prevent their children from being exposed to aggressive behavior patterns exhibited by other Roma children and parents.

Still, the majority of communities often remain unwilling to accept Roma children into educational institutions. Schools frequently argue that non-Roma parents do not want their children to be placed in classes with Roma students. Sometimes, even the simple act of Roma and non-Roma children playing together in the same schoolyard during recess is frowned upon. While it is not our intention to judge, it must be acknowledged that the majority society plays a key role in maintaining segregation. Even in the 21st century, we still struggle to see one another simply as human beings rather than judging each other based on ethnic background.

Roma Children in Integration-Based Education

Gábor Nagy and József Juhász defined the concept of integration in the 1985 edition of the *Explanatory Dictionary of the Hungarian Language* (*Magyar Nyelv Értelmező Kéziszótára*) as follows: "Integration means the assimilation, incorporation, or unification of separate parts into a larger whole or unit.'(O. Nagy and Juhász, eds., 1985, p. 596)

In the context of education, ResearchGate provides the following definition: Integration is to integrate a person in a school activity with other students for a specific time. It focuses on a separate system (ResearchGate, n.d., para. 3).

The 21K School's definition discusses integration in the context of inclusion. Integration is a step toward inclusion, but it's not the entire picture. Under this arrangement, students who have special needs or learning differences are integrated into regular classrooms. But the system that surrounds them might still be unchanged (21K School, n.d., para. 2).

Surdu, Vincze, and Wamsiedel claims that there is also a growing demand for integrated education among Roma parents. According to a 2005 study conducted by the United Nations Development Programme (UNDP) in five Central European countries (Bulgaria, the Czech Republic, Hungary, Romania, and Slovakia), an average of 58.9% of Roma parents across these countries expressed a desire for their children to attend schools together with children from the majority population. In Romania, this figure was 54.2%, meaning that more than half of Roma parents believed that integrated education would be more beneficial for their children. By 2010, a new survey found that 72.7% of Roma parents (out of a sample of 985) preferred mixed classrooms, even though only about half of the respondents' children attended such classes (Surdu, Vincze & Wamsiedel, 2011, p. 66).

In order to benefit from a high standard of education, Roma children must have the opportunity to attend kindergartens and schools that are also attended by children from the majority population. Roma parents themselves widely share this view.

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As highlighted in Emese K. Nagy's study *The Education of Roma Students: Integrated Education and Teacher Preparedness*, integration is significantly hindered by the lack of professionals with appropriate qualifications, practical experience, and dedication—individuals who could effectively support Roma children's adaptation within the school system. Governments should implement policies to eliminate educational segregation […] and promote inclusive education. Teacher training programs should focus on equipping educators with better tools to support Roma students (Nagy, 2025, p. 7).

Additionally, the financial situation of educational institutions plays a significant role. There is often no capacity to hire dedicated staff to support and assist Roma students. For example, the presence of pedagogical assistants who speak the Romani language could greatly improve the students' motivation, their educational experience, and their trust in teachers. Mihaela Zatreanu also emphasizes the importance of Romani language proficiency in education in her study, *The Importance of Romani Language Learning and Teaching for a More Inclusive Education for All*. The presence of the Romani language in schools should not only be a symbolic choice, but a conscious decision ... enabling the training and employment of Roma teachers, training of non-Roma teachers from the perspective of educational Romanipen (Zatreanu, 2021, p. 4)

According to Horváth and Toma (2006), the educational integration of Roma children needs to be rethought—new definitions and approaches should be introduced. The aim should be to ensure that these students feel welcomed and included in educational institutions and are embraced within the broader cultural landscape.

Roma also need to strengthen their identity and foster cooperation with their families and the communities they come from. Unfortunately, the current education system does not support this goal—indeed, it is often perceived as obstructing Roma students' success. One major issue is the system's rigidity and overregulation. Most Roma children enter school without having attended kindergarten, making it nearly impossible to expect them to adapt and perform according to rigid curricular standards.ʼ(Roth & Moisa, 2011).

The Concept of Inclusion in the Context of Educating Roma Children

Istvánné Fülöp defines the concept of inclusion as follows: Inclusion means acceptance. Inclusive education is a fundamental institutional approach that fully considers children's and students' individual differences—whether social, cultural, or biological—and builds upon these differences to create an inclusive environment regarding personnel, infrastructure, and pedagogy. This environment ensures the implementation of the threefold principle of effectiveness, efficiency, and equity.ʼʼ(Fülöp, 2014, p. 7).

In her study *Defining Inclusionary Education: A Review of Recent Literature*, Melissa Dockrill Garrett cites Veck's definition. Veck (2014) defined inclusion to be when

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'specialized instructional practices and settings are eliminated in education' (p. 452), focusing instead on embracing learner differences, creating equal opportunities for all learners, and ensuring that educators take collective responsibility for all learners (Veck, 2014, as cited in Garrett, 2022, p. 452).

The 2024 definition by the Oxford Review is one of the most recent sources discussing this concept. Inclusive education is an approach that ensures all students have equal access to quality education by removing barriers and providing the necessary adaptations to support diverse learning needs (Oxford Review, 2024).

The concept of inclusion represents a higher level of integration. It presupposes an educational system grounded in respect for human rights and accessible to all, regardless of ethnic background. Inclusive education does not simply refer to placing students from different backgrounds in the same classroom; it requires a systemic transformation. Changes are necessary so Roma children can also effectively participate in learning. Inclusive educational strategies mean not merely integrating Roma children into mixed groups while maintaining traditional methods but consciously adapting teaching strategies and providing the necessary resources to ensure all students reach their full potential.

The European Commission's INCLUD-ED project (2006–2011) revealed that children who participated in inclusive education achieved significantly better academic results than those who did not. The findings showed that inclusion overcomes all forms of segregation and has a positive impact not only on academic achievement but also on social behavior. The report highlights the critical role of human resources—mediators and educators—who support children with specific learning or other special needs. To achieve this, it is necessary to recognize cultural and educational differences among children, for teachers to apply inclusive teaching methods, and for the required financial support to be available' (Roth & Moisa, 2011).

The process of differentiation must play a central role in education for the successful implementation of inclusion. Learning social behavior norms in a diverse, heterogeneous community becomes much easier for Roma children. Values and behavioral norms largely develop through the examples observed in one's environment. In ethnically mixed groups, children tend to follow the dominant behavioral models. It is important for them not to encounter only Roma role models in their daily lives but also to see and learn other behavioral patterns.

Inclusion appears to be the most viable long-term solution for the Roma population to become fully integrated members of society. If children grow up in mixed groups and communities from preschool age, this normalization of diversity may ease their future integration into the majority society. As a result, their access to the labor market could

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become smoother, equality of opportunity more achievable, and discrimination reduced—ultimately fostering lifelong inclusion´ (INCLUD-ED, 2007).

This leads us to an essential question: Is there an optimal solution, and if so, what is it? Which strategy would most effectively strengthen the relationship between Roma children and the educational system, improve academic performance, and ensure that Roma children are present in education from an early age, even as young as three? If we examine the available options more closely, we can see that all three approaches—segregation, integration, and inclusion—have advantages and disadvantages. However, it is crucial to recognize that identifying the appropriate strategy is only possible if Roma children can enter the education system in the first place. This brings us to a key question: What can we do to ensure Roma children are admitted into educational institutions? Once we can answer that satisfactorily, we will be better positioned to choose the approach that best supports their development.

However, examining these perspectives solely from a theoretical standpoint is not enough. In many areas of life, while theoretical models may provide useful insights, their practical implementation often differs significantly from the theory.

Segregation, Integration, and Inclusion - Sampling and Institutional Research in Harghita County

Between 2020 and 2024, I participated in a research project that stood between the fields of sociology, education and Romani studies. The study examined the factors influencing the institutional attendance of Roma children of preschool age in Harghita County. During the research process, I visited kindergartens across four major regions of Harghita County: Odorheiu - Secuiesc, Miercurea Ciuc, Gheorgheni, and the Cristuru - Secuiesc area.

Throughout the fieldwork, I visited several kindergartens in Harghita County, observing both segregated and integrated groups. I chose Harghita County for the sampling because I live here and have the opportunity to observe the day-to-day lives of the Roma, as well as the everyday lives of the teachers who work with Roma children in this County. This way, apart from the theoretical approach, I also have practical experience working with Roma children in Harghita County. The sampling procedure was based on the structured and unstructured interviews recorded in audio format. The two target groups consisted of parents of Roma children of preschool age and the kindergarten teachers working with Romachildren. The geographical scope of the sampling was Harghita County. I divided Harghita County into four main regions: the Odorheiu - Secuiesc, Cristuru - Secuiesc, Miercurea - Ciuc, and Gheorgheni. The sample included six institutions from five different areas across four regions of Harghita County. In Odorheiu Secuiesc, I visited both urban and rural institutions simultaneously, whereas, in the other regions, I visited either a single urban or rural kindergarten. The main reason

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behind this was the fact that in the given areas, those were the only institutions that admitted Roma children. The sampling locations (preschools working with Roma children in the selected settlements) were chosen based on a clearly defined set of criteria: I visited kindergartens with which I had previous experience, existing points of connection, and where I knew there would be a greater openness to participating in the research.

Due to the desegregation law currently in force in Romania, this was an important consideration, as it is officially prohibited to educate Roma children in a segregated manner. However, in practice, this remains the most widely applied educational strategy for Roma communities. As a result, many institutions are wary of inspections, and school management tends to be reluctant to engage with any unfamiliar or external initiatives. The existing points of connection, however, helped ensure that the partner preschools were willing to participate in the research.

Another practical consideration I had to take into account was that most institutions are dismissive toward Roma students; only a few are willing to take on the education of Roma children of preschool age. In places where this does happen, the kindergarten often becomes an institution attended exclusively by Roma children. These are the institutions I sought out within the geographical boundaries of Harghita County.

Both urban and rural areas must be represented in the research through the selected sampling locations. While segregated education is dominant in urban settings, in rural areas, there are occasional examples of integrated kindergarten groups. Both the urban and rural character of Harghita County are significant, so I can only obtain results that provide a more complete and accurate picture of reality by involving both types of institutions.

A total of 15 teachers and 51 Roma parents participated in the process. In compliance with the General Data Protection Regulation (GDPR), I ensured the anonymity of the institutions participating in the research, the teachers working there, and the parents who were interviewed. However, as the director of the Ficánka Kindergarten, I did not feel that confidentiality was necessary in the case of the institution I lead. The kindergarten openly committed to supporting this research process; therefore, anonymity was provided only to the staff working there and to the parents of the Roma children attending the institution. The results indicated that the majority of Roma preschool children in Harghita County are enrolled in segregated educational settings. Instances of integrated education were observed in only two locations: at the Ficánka Kindergarten in Odorheiu - Secuiesc and in an anonymous kindergarten in the region of Odorhei.

Segregated Early Childhood Education at the Ficánka Kindergarten

Ficánka Kindergarten provides Roma children with the opportunity to learn in integrated groups. Ten years ago, we launched the "Chance for Them Too" program, which placed special emphasis on integrating Roma children.

Parents can decide whether to enroll their children in segregated or integrated groups. Experience shows that factors such as family background, financial situation, and the level of trust or mistrust toward institutions play a key role in shaping their decision. In practice, most parents choose segregated education due to the reasons mentioned above.

The spontaneous interviews with the teachers working in the segregated group at the Ficánka Kindergarten revealed some surprising perspectives.

According to our first interviewee, integrated education may not necessarily be better than segregated education, as Roma culture and the behavioral patterns differ significantly from the mainstream norms. The teacher believes that the problem does not lie in the Roma children's ability to adapt but instead in the majority society's ongoing inability to accept minorities. The family circumstances and broader environment from which Roma children come also influence the process of integration. The teacher emphasized that Roma children often struggle to keep up academically with their majority peers, leading to a higher dropout rate.

Our second interviewee, who teaches in the segregated group of the Ficánka Kindergarten, drawing from rural experiences, explained that good relationships between Roma and Hungarians can develop in small village communities where everyone knows each other. It is common for Roma individuals to assist Hungarians with agricultural work. However, the interviewee believes this model cannot be replicated in larger towns such as Odorheiu - Secuiesc. In their opinion, integration in more populous settlements is not feasible, partly due to the attitude of the Hungarian majority and partly due to the Roma community's persecution complex. The Roma often feel excluded and looked down upon by the majority—a sentiment that has some basis in reality—but they also tend to cry wolf even in situations where no real problem exists.

An Examination of Segregated Education at an Anonymous Rural Kindergarten in the Cristuru – Secuiesc region

Similar perspectives emerged during interviews with teachers working with Roma children in the Cristuru-Secuiesc region. According to our interviewee, the initial integration of Roma children faced significant difficulties, as members of the majority community were not prepared for the steps required for successful integration.

Over time, the majority of families began withdrawing their children from kindergarten when the "housed Roma"[2] children started attending the institution. Our interviewee, who has been working there for twenty years, witnessed this phenomenon and shared the information with me during the interview. There is no exact period – this was a long but, unfortunately, inevitable process. Gradually, from year to year, all Hungarian children were withdrawn, and only the housed Roma children remained. A

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[2]   The term "housed Roma" refers to a group of Romani people with better financial status.

further shift occurred when children from the Roma colony′ also began attending. In response, the housed Roma families started withdrawing their children as well. Today, Hungarian families and wealthier housed Roma families prefer to enroll their children in the kindergarten of the nearby town. As a result, only the children from the Roma colony currently attend the rural kindergarten near Cristuru - Secuiesc. The housed Roma families identify as Hungarian and do not want their children attending kindergarten with the Roma children living in the colony, while the Roma people living in the colony fully embrace their Roma identity.

The kindergarten teachers concluded that education within a segregated group yields much more effective results than forced integration. According to Romanian Law 198/2023, segregation in education, particularly against Roma children, is prohibited. However, as the case in the Cristuru- Secuiesc area demonstrates, segregation and discrimination are often chosen by the Roma community itself. In Roma communities, families often live according to a strong caste system, and those belonging to higher castes do not want to mix with those from lower castes. This leads to situations where parents from higher castes withdraw their children from kindergarten if children from lower-caste families begin to attend the same institution. The academic literature refers to this phenomenon as *separation* when one Roma group distances itself from another Roma group. The different Roma groups not only remain separate from one another, but often sharply distinguish themselves. They frequently define their own identity by emphasizing their differences from other Roma groups (Szuhay, 2012).

Michael Kozubik's scientific work - Social Structure in a Roma Settlement: Comparison over Time – provides insight into this significant aspect. The most vulnerable group of the segregated and separated Roma communities are the 'degesa' … they inhabit segregated settlements and they are excluded by their own ethnic group (Kozubik, 2020). In our case, Housed Roma families withdrew their children once the Roma children from the colony started attending.′

Initially, the teachers feared inspections and penalties. Thus, they meticulously documented all steps of their pedagogical work to demonstrate that integration efforts had been made, even though reality diverged from their initial plans. When they faced the phenomenon of the White Flight and intraethnic separation, they had to accept the fact, that in this context, integration is not an option. In the beginning, they tried to teach the hungarian and the Housed Roma together, and than the White Flight phenomenon occurred. Only the Housed roma children remained in the kindergarten. When the members of the lower Roma casts attended their children too, the intraethnic separation appeared. Today, the kindergarten has only Roma children of the lower casts. This way,

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′   We use the term colony to describe a place outside the town or village where only the poor Roma people live.

′   When one roma group voluntarily segregates itself from another group of romas, we call it separation.

where different roma groups don't want to be next to each other, it is impossible to expect that the members of the majority society will accept the Roma.

The kindergarten teachers emphasized that instead of punishment, they should be recognized and rewarded for their perseverance and dedication in such a challenging environment. They also pointed out that lawmakers are often familiar only with theoretical aspects, and the mandatory directives they establish do not function effectively in practice. A proper understanding of this complex issue can only come from those who work daily within Roma communities and witness their living conditions, habits, and persistent challenges.

A Case Study of Integrated Education at an Anonymous Rural Kindergarten in the Odorheiu - Secuiesc region

The perspectives shared by the kindergarten teacher working in an integrated group at an anonymous rural kindergarten in the Odorheiu - Secuiesc area were equally surprising. The given institution includes 2 or 3 Roma children in the group alongside Hungarian children: roma children eat and learn together with the Hungarians.

According to our interviewee, Roma children, even at the kindergarten level, prefer to stay together in one group, playing with each other and showing strong attachment. They find it more difficult to integrate into groups with a majority of children and generally show little desire to mix with Hungarian peers. Once they become accustomed to a teacher, they develop a strong attachment to them—more so than is typically observed among Hungarian children.

The kindergarten teacher also reported a peculiar phenomenon. At the beginning of the school year, Roma children tend to be charming, kind, helpful, and somewhat shy. However, their behavior changes noticeably as time progresses: they become more disobedient. While initially adhering to group rules, they begin to test boundaries over time. They are often less responsive to teachers' instructions from the second semester onwards.

There are circulating rumors that Hungarian children will be withdrawn from kindergarten due to the increasing number of Roma children entering the groups. This trend is reportedly mirrored in schools as well.

Our interviewee expressed hope that these rumors will not materialize; however, it was noted that the majority of parents are dissatisfied with the current situation.

Formulating Long-term Goals and Conceptualizing an Ideal Future Scenario

In Romania, the National Strategy for the 2014–2020 period included the economic and educational integration of the Roma population. Key elements of the education strategy were reducing the educational attainment gap between Roma and non-Roma populations, decreasing school-based discrimination and segregation, providing social services to mitigate economic disadvantages, and increasing the proportion of children participating in after-school programs.

The Ficánka Kindergarten in Odorheiu-Secuiesc was among the first institutions to commit to integrating the city's Roma population into the educational system. According to the philosophy upheld by our institution's management and kindergarten teachers, respect for diversity and the provision of equal opportunities are fundamental values that every educational institution should guarantee for preschool-aged children. We launched an opportunity-creating program entitled "A Chance for Them Too!" through which we succeeded in opening the Kézenfogva Inclusive Kindergarten

The newly established Kézenfogva Inclusive Kindergarten provides disadvantaged children living in extreme poverty with a family-like, welcoming, and calm environment, in line with European Union standards.

It is a unique national institution, offering modern facilities and an inclusive educational approach designed explicitly for disadvantaged Roma children. Although the children attending this kindergarten are not placed in mixed groups, the setting cannot be classified as a segregated education.

Thanks to the kindergarten's facilities, the high-quality equipment, and the professional expertise of the kindergarten teachers, the children at Kézenfogva Inclusive Kindergarten can develop under the same conditions as Hungarian and Romanian children attending majority institutions

According to the data collected through the Educational Barometer survey: "The infrastructural facilities of segregated, Roma-majority educational institutions are generally below average. Schools without Roma students are the best equipped with modern teaching tools, while segregated or Roma-majority schools are the least equipped." (Sólyom & Kiss, 2023, p.48).

This excerpt is drawn from the Strategy for the Inclusion of Roma in Harghita County. As the quote illustrates, institutions operating with segregated education models are disadvantaged regarding equipment and overall effectiveness. However, this statement does not apply to the Ficánka Kindergarten in Odorheiu- Secuiec: the institution offers high-standard education supported by modern technological tools for Roma children. One example is the "Godfather Program," during which I contacted local entrepreneurs in Odorheiu - Secuiesc to finance daily meals for the children attending the Kézenfogva Inclusive Kindergarten.

As a result, each child received a warm lunch every day as part of the kindergarten program. Our long-term goal is the full implementation of an inclusive educational strategy, though we recognize that achieving this goal will require years and decades of dedicated work.

´   Author's own translation

Conclusion

Although the academic literature discussing these three concepts provides valuable insights, a significant gap exists between theoretical considerations and practical implementation. The persistent segregation practices in the education of Roma children are the result of deeply embedded social and institutional mechanisms that go beyond the boundaries of the educational system.

The advantages of integrated education—particularly growing demand among Roma parents for inclusive school environments—clearly underline the necessity of desegregation. Recognizing the internal heterogeneity of Roma communities, as well as addressing intercultural differences sensitively, are indispensable prerequisites for genuine inclusion. Segregated educational practices are not only problematic from legal and ethical standpoints, but they also undermine long-term opportunities for social mobility. Integration efforts can only be practical if they manifest not merely in structural interventions but also in a fundamental shift in mindset—on the part of educational institutions, teachers, and policymakers alike. Inclusive education that is culturally responsive serves not only the interests of Roma communities but also contributes to the strengthening of social cohesion. Achieving this is a strategically important task at both national and European levels.

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Exploring Intercultural Engagement: The Multifaceted Challenges Faced by International Students in Hungary

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Abstract

Engagement is widely regarded as a fundamental concept for understanding academic achievement and student motivation in contemporary educational science. Moreover, student mobility has been identified as an effective approach to enhance engagement among international students. Despite the numerous challenges posed by a foreign environment, Eastern-European higher education has seen a sharp rise in international student enrolment, driven by advancements in education, internationalization, and attractive opportunities. Established by a government decree in 2013, the Stipendium Hungaricum scholarship has positioned Hungary as a top destination for international students seeking higher education. However, awareness and engagement with cultural diversity and the available resources for international students remained limited, often resulting in their needs being overlooked. Given this, research on the experiences of international students and their adaptation to cultural diversity in Hungary warrants significant attention. This study aims to explore the challenges faced by international students across various Hungarian universities. Data were collected from N=15 international doctoral students through semi-structured interviews and analysed using qualitative thematic analysis. While the participants had high English proficiency, their limited Hungarian language skills emerged as a significant challenge in daily life and academic engagement. The emerging themes encompass cultural differences, social environments, and varied personal experiences, specifically focusing on communication, cultural challenges like language barriers, opportunities for social interaction—or their absence—along with accommodation services, and health concerns. The study's findings offer valuable insights for leaders and stakeholders, aiding them in addressing challenges and improving preparations for welcoming international students through both short- and long-term strategies.

Keywords: Student engagement, international students, higher education, intercultural diversity, internationalization

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Introduction

The 21st century has witnessed a significant rise in international student mobility, a trend that the Organisation for Economic Co-operation and Development (OECD) has identified as a major shift in global education dynamics. This cross-border movement has created increasingly diverse academic environments and contributed to the global economy (Global Education Monitoring Report Team [1180], 2018; OECD, 2021). In many countries, multicultural academic communities are becoming the norm, promoting the exchange of knowledge and cultural perspectives. Countries with strong higher education systems have become major hubs, drawing students from around the world. Many of these nations, such as the United Kingdom, the Netherlands, and Germany, have implemented structured policies that facilitate smoother integration for international students (ICEF Monitor, 2023; Ministerie van Onderwijs, 2024; Weale, 2024). Similarly, Hungary, has experienced substantial growth in its international PhD and DLA student population, as highlighted by a recent Statista report (Medve, 2024).

In Hungary, the number of doctoral students increased by approximately 44% over recent years, underscoring the country's commitment to attracting and supporting advanced-level students from diverse backgrounds. This growth has been driven by the strength of Hungarian academic institutions, the availability of research opportunities, and scholarship programs like the Stipendium Hungaricum, which offers financial support to non-EU students. Such initiatives position Hungary as an attractive option for students pursuing advanced studies in fields like education, engineering, natural sciences, and medical research, mirroring global trends as students increasingly seek education beyond their home countries (OECD, 2023). Motivations for this trend include the desire to gain exposure to different cultural and academic perspectives, access to specialized training unavailable in some regions, and the international reputation of certain institutions (Altbach & Knight, 2007; Chirkov et al., 2007). In Hungary's case, the growing international doctoral student population has enriched its academic community and fostered greater global understanding and cooperation (Császár et al., 2023; Kasza, 2018). This influx of diverse perspectives and ideas has the potential to stimulate innovation, contribute to local economies, and leave a lasting impact on both Hungarian and global academic landscapes.

As international education expands, the need for intercultural engagement becomes increasingly important. International students bring a wealth of cultural perspectives, enriching academic environments and promoting mutual understanding among diverse student populations (Altbach & Knight, 2007; Glass et al., 2023; Urban & Palmer, 2014). In this study, intercultural engagement refers to the dynamic and reciprocal interactions that occur between individuals from different cultural backgrounds as they navigate new social, academic, and institutional environments. It goes beyond mere exposure to difference and emphasizes communication, mutual adaptation, and relationship-building. This understanding draws from Deardorff's (2006) definition of intercultural competence, which highlights the role of attitudes, knowledge, and skills in navigating

cultural diversity. While our participants came from varied cultural and linguistic backgrounds, their engagement in Hungary's social and academic life involved challenges that spanned beyond language, encompassing access to services, feelings of inclusion or exclusion, and structural institutional dynamics. Navigating intercultural engagement requires both respect and effective communication, which are critical to students' academic success, personal development, and social integration. Research suggests that successful intercultural engagement hinges on two core elements: intercultural respect and intercultural communication (Spencer-Oatey & Franklin, 2009; Zhou et al., 2008). Intercultural respect, involving the acknowledgment and appreciation of cultural differences, has been shown to reduce social isolation for many international students and foster a welcoming academic environment (Glass & Westmont, 2014). Through respectful interactions, students from varied backgrounds feel more included, enhancing their overall well-being and academic participation.

In this study, the concepts multicultural, cross-cultural, and intercultural are used with distinct meanings to reflect the nature of international student experiences. Multicultural refers to the coexistence of multiple cultural groups within a single environment, often without necessarily interacting in meaningful ways (Banks, 2004). Cross-cultural pertains to comparative perspective between two or more cultures, typically highlighting similarities and differences (Berry, 1997). Intercultural, in contrast, emphasizes dynamic interaction and mutual understanding between people from different cultural backgrounds, focusing on dialogue, empathy, and adaptation (Spencer-Oatley & Franklin, 2009). These distinctions are important for interpreting how international students in Hungary engage with cultural diversity and adapt to the host environment.

Intercultural communication is equally essential as mentioned by Smith and Khawaja (2011), helping students navigate unfamiliar cultural and linguistic norms in their host countries. Challenges in intercultural communication, such as language barriers or differing communication styles, can lead to misunderstandings and limit students' ability to connect with peers and professors. Research highlights that support programs like language proficiency courses and intercultural workshops can significantly improve students' confidence and adaptability, ultimately enhancing their social integration and academic success.

While these opportunities benefit both students and their host communities, international students in Hungary also face unique experiences and difficulties in adjusting to a different cultural and academic setting. These difficulties include language barriers, cultural adjustments, differing academic expectations, and limited support networks, all of which can impact their academic and personal well-being (Spencer-Oatey & Franklin, 2009; Zhou et al., 2008). Studies on student mobility in Eastern European countries like Poland and Czech Republic highlight similar struggles, particularly in terms of language barriers and limited engagement opportunities (Kudrnáčová et al., 2020; OECD, 2023). Understanding the experiences of these students is essential not only for

improving their individual outcomes but also for shaping policies and support systems that facilitate their integration and success. This study aims to explore the intercultural engagement of international doctoral students in Hungary, examining both their experiences and challenges within the host country. Through this analysis, the research seeks to highlight the factors that enrich their educational journey and the obstacles they encounter, providing valuable insights for Hungarian universities and policymakers to create a more inclusive, supportive, and enriching environment for the growing international student population.

Given these considerations, the present study addresses the following research questions:

1. What are the primary challenges faced by international students studying in Hungary in terms of cultural, social, and academic adaptation?

2. What are the common themes emerging from international students' experiences in Hungary?

3. What strategies or provisions can Hungarian universities implement to better support international students?

By addressing these questions, this study seeks to provide a deeper understanding of the intercultural experiences of international doctoral students in Hungary, offering insights that can inform support systems and policies aimed at enhancing their academic social experiences.

Methods

Research Design

A qualitative case study approach was employed in this study to explore and understand the immersive experiences of international students within the sociocultural context of Hungarian universities. Qualitative research was deemed the most suitable method, as it investigates phenomena within their natural settings, seeking to understand or interpret them based on the meanings individuals ascribe to them (Denzin & Lincoln, 2011). The case study design was particularly relevant for this research, as it centers on factual and observational insights into a phenomenon, with careful attention to detailed individual contexts (Yin, 2009).

Research Respondents

Fifteen international doctoral students from various Hungarian universities and diverse PhD programs were selected as participants through purposive sampling. To capture a range of perspectives shaped by institutional and geographic diversity, participants were drawn from a variety of institutions, such as Corvinus University of Budapest, Eötvös Loránd University, University of Debrecen, and National University of Public Service. All participants were enrolled in English-medium doctoral programs, and interviews were conducted in English. While participants demonstrated advanced English proficiency (as

detailed in Table 1), none reported conversational or academic-level fluency in Hungarian. This language gap significantly influenced their ability to navigate public services, engage with university resources, and integrate into the broader social environment.

The researcher shared a similar background as an international student, which facilitated a strong connection with the participants, offering insights from both within and outside the students' perspective. This shared experience of being similarly affiliated academically provided the researcher with both an insider and outsider perspective, fostering trust and encouraging respondents to engage in open, fluid, and conversational interviews that allowed for richer data collection.

Table 1 details the demographics of the fifteen students, who were selected according to the following criteria: (1) enrollment in a doctoral program at a Hungarian university; (2) residency in Hungary exceeding six months; and (3) specialization in Education, Social Sciences, or Humanities.

Table 1

Demographics of the Respondents

Pseudonyms	Gender	Age	Length of Residence	Major	Country	First Language	English Proficiency Level
1 Ysa	Female	25	4 years	Social Science	Philippines	Tagalog	C2
2 Nan	Female	33	2.5 years	Education	Myanmar	Burmese	C1
3 Aia	Female	31	4 years	Education	Myanmar	Burmese	C1
4 Will	Male	33	10 months	Social Science	Philippines	Tagalog	C2
5 Gal	Female	30	4 years	Education	Mongolia	Mongolian	C2
6 Seri	Female	31	2 years	Social Science	Malaysia	Malay	B2
7 Lorenzo	Male	28	5 years	Social Science	Philippines	Tagalog	C2
8 Lee	Female	26	10 months	Education	China	Mandarin	B2
9 Dao	Female	26	4 years	Social Science	Laos	Lao	C1
10 Daniel	Male	39	2 years	Humanities	Philippines	Tagalog	C1
11 Jai	Female	30	6 years	Education	India	Hindi	C2
12 John	Male	30	6 years	Education	Nigeria	Ikom	C2
13 Polina	Female	28	6 years	Education	Russia	Russian	C2
14 Ketevan	Female	30	2 years	Education	Georgia	Georgian	C2
15 Gabriel	Male	45	4 years	Social Science	Philippines	Tagalog	C2

Data Collection

A semi-structured interview was conducted, where each participant was asked a set of core research questions, with flexibility to further explore topics based on their responses. This interview style was well-suited to the study as it provided insight into participants' subjective experiences capturing their personal insights and experiences (Gill et al., 2008; Kallio et al., 2016) and allowed for the exploration of themes that the researcher had not initially considered. Each interview session, conducted in English, lasted between 45 and 70 minutes. Immediately after each session, the interviews were

transcribed and the researcher prepared additional notes and reflections to compare with the transcribed content.

Data Analysis

Guided by qualitative research principles, the data analysis employed an inductive approach, utilizing both narrative and thematic analysis to synthesize the interview data in depth. The process began with repeated readings of each transcript to ensure familiarity and immersion in the data. Open coding was then applied, allowing patterns and meanings to emerge naturally from participants' narratives without the imposition of pre-established categories.

Thematic analysis followed the six-step reflexive model proposed by Braun and Clarke (2006): (1) familiarization with the data, (2) generating initial codes, (3) searching for themes, (4) reviewing themes, (5) defining and naming themes, and (6) producing the report. Codes were created and themes were identified through iterative comparison within and across interviews. The analysis produced two categories: (1) the students lived experiences related to cultural differences, social environments, and internal pressures; and (2) the strategies and recommendations they proposed to navigate or mitigate these challenges. Within each category, subthemes such as language barriers, interpersonal dynamics, peer relationships, and healthcare access were explored. To enhance conceptual grounding, themes were refined through constant comparison, analytic memo-writing, and research reflection. This reflexive process allowed the researcher to remain attentive to both explicit content and underlying assumptions in the data. Recurring issues—particularly those related to language, access, and belonging—were interpreted not only as personal challenges but also as structural dimensions of intercultural engagement within the Hungarian higher education context.

Findings

The findings highlighted that international PhD students in Hungary experienced a range of both common and unique challenges as they adjusted to their new environment. These students had to navigate numerous aspects of Hungarian society, from cultural norms and social expectations to university structures and interpersonal relationships. Additionally, they encountered challenges in managing their psychological well-being, adapting to the healthcare system, and adjusting to behavioral norms. Furthermore, although language-related challenges were frequently mentioned and clearly significant, they were not isolated issues. Instead, they were interwoven with broader challenges relating to students' social environments, healthcare navigation, interpersonal experiences, and institutional inclusion. Each of these elements required significant adaptation as the students worked to find their place and thrive in a foreign setting. To provide a clearer understanding, the findings are organized into three key categories: the cultural differences, social environments, and internal pressures faced by these students.

Cultural Differences

The respondents came from a variety of cultural backgrounds, distinct form Hungarian or broader European culture. This diversity caused some individuals to go through what is commonly known as culture shock, as they encountered different beliefs, values, attitudes, and lifestyles. Entering this new cultural environment required them to adapt to unfamiliar communication styles, relationship dynamics, and value systems. Within this category, four themes emerged, highlighting common aspects of cultural differences.

Theme 1: Language Barrier. Respondents frequently highlighted language barriers as a major challenge, often underlying difficulties in areas like healthcare, information access, and housing. Language limitations led to misunderstanding with healthcare providers, restricted access to essential information, and caused miscommunication with landlords, complicating accommodation arrangements. The following excerpts reveal personal experiences that illustrate the daily impact of language barriers on students' lives and integration.

The first one was from John, as an international student, he often found the information provided to be insufficient. For instance, when browsing university or job websites, the English content can differ significantly from the Hungarian version. He came to realize that even when information is translated, it often requires verification from someone fluent in Hungarian to ensure accuracy.

> *"I can say that as an international student, the information provided for us are not enough, like for example when checking school or job websites, the information provided in English are quite different from the ones provided in Hungarian. I remember one particular occasion with my bank's website, the Hungarian language translation to English was quite different and I needed help to understand better what the given information meant. So, I have come to realize that even though, for instance, in certain cases, if you receive an information in Hungarian and you translate it to English, you still must cross check it with someone who speaks the language, to make sure that it's the right information." (John)*

On another note, administering tasks, like handling visa matters, accessing healthcare, or visiting government offices, were challenging. For example, Ketevan and Dao recounted difficulties in explaining their issues and, in one case, needing to return multiple times just to get a mobile phone number due to language misunderstandings.

> *"When it comes to administrative stuff, like visa [processing], doctors, and government offices, I had difficulties in explaining to them my issues, and for example when I had to take my mobile number, I had to visit the place five times because they were rejecting me since they didn't speak the language" (Ketevan & Dao)*

Ysa also noted the limited chances for international students to join campus groups or organizations; while these groups actively promote themselves, the information they display is often only in Hungarian.

> *"I think there is a limited opportunity for international students to join groups or organizations, because like during the enrollment period, you can see that certain organizations are encouraging everyone to join but then you will see that all of the information printed are in Hungarian." (Ysa)*

Aia from Myanmar highlighted the challenges of accessing services, particularly healthcare, due to the language barrier. She observed that locals are generally more willing to help if a student speaks Hungarian, but without it, integration becomes far more difficult.

> *"Due to the language barrier, availing services like for example the health care services here, it is very challenging, especially for the international students. If you speak Hungarian, they [the locals], I feel like they are willing to help but, if you don't speak the language, it's very very difficult to integrate here." (Aia)*

As Ysa, Jai, Dao echoed, the language barrier in Hungary not only limits communication but also restricted the information and opportunities available to international students.

> *"In Hungary in general, it [the language barrier] is hard since Hungarians don't speak English nor us, international students, Hungarian fluently. Also, due to this [barrier] we receive limited information and opportunities." (Ysa, Jai, & Dao)*

Thus, the language barrier presented a significant challenge for international students in Hungary, affecting daily tasks, access to services, and integration. Despite institutional support, limited language accessibility hinders students' ability to access resources and opportunities, highlighting the need for more inclusive communication to foster fuller participation in academic, social and community life.

Theme 2: Interpersonal Demeanor. In Hungary, cultural differences in interpersonal styles between locals and international students, specially from Asian backgrounds, often emerge. Hungarians tend to value individualism and personal autonomy, which can feel distant to Asian students who are used to a more collectivist, team-oriented approach that emphasizes harmony and warmth. These contrasting attitudes can lead to misunderstandings but also offer valuable opportunities for cross-cultural learning.

An example was from Aia's observation, she observed a lack of warmth from locals, possibly due to her Asian background. Coming from Southeast Asia, where helping foreigners is common, she finds Hungary's more reserved attitude strikingly different from the welcoming spirit she's accustomed to at home.

> *"I don't want to say that Hungarians are cold, but the public that the normal people we met, they are somewhat hostile. Maybe because I'm Asian, and like especially in*

> *Southeast Asian countries, even though they don't speak English, if a foreigner or a stranger needs help, they are very willing to help and her they don't even try to communicate, so I feel like they are not really helpful because in the culture I grew up in, we have a very warm personality and we are always ready to help, but here it's quite the opposite." (Aia)*

In another context, Ysa felt that international students were often excluded from events and conferences, seemingly because they did not speak Hungarian. Although she understood the language barrier, she believed that there were ways to involve non-Hungarian speakers in meaningful roles.

> *"There are times that I feel like we, international students, are not being included in the events and conferences just because we don't speak Hungarian, because my Hungarian colleagues they are given the opportunity to handle the departments and wants to participate with doing the task. I mean I understand that we don't speak the language, but there are ways around it, maybe just give us a little opportunity to help, for example, handle the registration for conferences, or administrative things that even though we need Hungarian speakers, we can work around it you know. We don't have to speak Hungarian to people, because if it's a conference, or an event, there will be people that will speak English and that is a well-known fact. That's why I always ask my supervisor about this, that it would be nice if they will also involve us, international students in handling events because this will be a great opportunity to be part of the university." (Ysa)*

To sum it up, both Aia and Ysa's experiences highlighted the challenges international students faced in adapting to Hungarian culture and university life. The reserved nature of local interactions and the language barrier created a sense of isolation for these students, making it difficult for them to feel fully integrated. Addressing these challenges by fostering a more inclusive and accommodating environment could greatly enhance the experiences of international students, allowing them to feel more connected and valued within their new community.

Theme 3: Health care. Healthcare services in Hungary present challenges for international students, particularly due to the limited number of English-speaking professionals. Many struggle to communicate medical needs, often relying on Hungarian speakers for assistance. Long wait times add to the stress, making access to care a complex and sometimes overwhelming process.

A case in point was Polina's difficult experience with a dentist in a state hospital, when the doctor became visibly frustrated with her for not speaking Hungarian and firmly told her not to return without a translator. She discussed that the treatment she received was unsatisfactory, leaving her feeling dismissed and poorly cared for.

> *"I don't have much good experience, before the dentist in a state hospital got angry because I don't speak Hungarian and she said not to go back next time unless I had a*

translator with me, then the general treatment that was given to me was not good at all so I had to go to a private hospital and fix the mistakes." (Polina)

Another instance was John's experience, highlighting both the language barrier and the complexity of the healthcare system. While technically accessible, navigating it was difficult due to unclear details. Having a Hungarian-speaking friend helped, but he worried about how he would manage without that support, knowing not all international students have such connections.

"I think the healthcare system here is difficult to navigate, probably more on the language, and I think also the healthcare system itself is tricky because not everything is written in black and white and not clear, so it makes it even a tad bit harder to navigate as a foreigner. So yes, you have access to healthcare, but that access comes about is the issue we have and for me, I'm just speaking generally, like for example you need a Hungarian speaking person to assist you, then it becomes easier, but it makes you wonder if you're doing it alone." (John)

A further case was Aia's experience, although she had private insurance, she was still directed to public hospitals. The waiting times were long, stretching out endlessly just to secure an appointment, in which other respondents also agreed with in their excerpts below.

"I'm not saying that the healthcare system in my country is great, but we still have our way around, like here for some reason they just send us to public hospitals despite having private insurance, and there, it takes forever to get an appointment. Let's say, I was having an infection where I need to get immediate attention, I must wait, if I'm very lucky, then the closest appointment I can get is two weeks from now. There was a time that I was finally given an appointment, and when I showed up to hospital, there was no doctor because they made a mistake, like the doctor wasn't scheduled to work during that day. So yeah, I was suffering a lot and there was no one there to treat me." (Aia)

"[When you go to the hospital] the challenge is when the doctor, the physician doesn't speak English and it's difficult sometimes to explain what [physical pain] you're really experiencing" (Daniel).

"The health care system is good, but you'd have to wait a really long time for you to get the appointment" (Lee, Daniel, Nan, Dao, Jai).

In summary, navigating the healthcare system as a non-Hungarian speaker presented numerous challenges for international students. Together, these experiences revealed a pattern of difficulties that impact international students' healthcare access, leaving many to rely on personal support networks or costly alternatives for the care they need.

Theme 4: Accommodation. International students in Hungary face challenges securing accommodation due to a competitive rental market and high demand for affordable

accommodation, Limited budgets often force students to compromise on location or quality, making it difficult to find safe and affordable housing.

> *"It's very tricky [to find an accommodation], and well it depends on our personality and our situation but finding a good place that meets our criteria and our price range [as a student], it's not very easy to find proper accommodation." (Aia)*

> *"If you want to buy something or rent a flat, I noticed that if I respond to a post expressing my intention, they don't reply or just leave the conversation since it's in English or even if it's in Hungarian when I use the translator. Oh! and the competition in looking for accommodation is so difficult because there will be competition among those who would like to rent a certain flat, and to get an actual spot to be considered in this competition that you must win for you to get the place." (Polina)*

Therefore, finding accommodation as an international student came with unique hurdles that went beyond simply locating a place to stay. Together, their experiences illustrated the complexities international students faced when seeking a suitable place to live in an unfamiliar environment.

Social Environment

International students navigate a complex social environment shaped by interactions with both international and local peers. Connecting with fellow internationals often brings shared experiences, such as adapting to a new country and overcoming language barriers. In contrast, relationships with local Hungarian students offer deeper cultural integration but may require overcoming cultural and language differences. These interactions expose students to diverse viewpoints, broadening their understanding of both Hungarian and their own cultures, and reveal two key themes: peer relationships and diverse perspectives, each crucial for social adjustment.

Theme 5: Peer relationship. Building peer connections is essential for international students facing a new social and academic environment. Many bonds with fellow internationals who share similar cultural adjustments, creating a supportive network. However, friendships with local students can be harder due to language barriers and fewer opportunities for casual interaction. Here are some personal accounts from international students illustrating their experiences.

> *"My peer relationships with other international students are very good, we get along very well, and like I mentioned before, I really don't have a Hungarian friend." (Aia)*

> *"I don't really have that much interaction with the locals especially in the university because of the separation of international and Hungarian students in the faculty." (Gal)*

> *"It's easier to build relationships with fellow international students than locals because we don't really have interactions or have limited interactions with them [the locals]." (Lee, Jai, Will, John)*

In essence, these international students' experiences show both the ease and challenges of building relationships abroad. While they form close bonds with fellow internationals, connecting with local students proves difficult due to language barriers and limited interaction opportunities. Despite friendly encounters, the lack of sustained engagement with Hungarian students creates a social divide. This highlights the need for more inclusive practices in educational institutions to foster genuine cross-cultural relationships.

Theme 6: Diverse perspectives. Studying abroad offers international students a chance to broaden their worldview, but differences in appearance, language, and culture can lead to distinct treatment, sometimes resulting in isolation or discrimination. Adapting to these challenges requires resilience as students navigate the excitement of a new environment while managing perceptions of being "different." Here are some experiences shared by international students.

> *"Being different, I have a different 'look' compared to the locals in Hungary, so frequently I get stares from them and it's uncomfortable, and feel like I get treated differently, just because I look different." (Aia)*

> *"I find Europe to be casual overall, but I've experienced subtle discrimination. As an Asian student studying abroad, locals sometimes greet me by shouting "Ni hao" [Chinese for "hello"] or "Konnichiwa" [a Japanese greeting], which can feel uncomfortable. Another difficult experience was during the COVID pandemic; I noticed people seemed to avoid or dislike me, especially when I was walking on the street, likely due to my Asian appearance." (Gal)*

Aia and Gal's experiences reveal the challenges of feeling "different" abroad. Though their host countries were mostly welcoming, they encountered subtle discrimination and stereotypes. Being treated differently based on appearance, through inappropriate greetings or avoidance, was disheartening. These stories highlight the need for greater cultural sensitivity to ensure all students feel respected and valued.

Internal Pressure

International students face significant internal pressures beyond academics. Financial adjustments, managing living expenses, and often being without family support are key challenges. Living independently adds further stress, requiring them to handle budgeting, and time management in a new environment. Cultural and language barriers can also lead to isolation and homesickness, creating a complex set of pressures as they adapt.

Theme 7: Financial Adjustments. For international students, financial adjustments often include additional academic costs, like attending conferences essential for professional development and growth. Though universities offer some funding, it's often minimal, leaving students to cover expenses themselves. This financial gap can deter students from

valuable opportunities, highlighting the challenge of balancing academics with financial stability.

> *"The university does try to support students [in attending conferences], but the assistance provided is often insufficient (Daniel, Aia, Nan) they [the university] only offers a small amount of funding. If a student is not presenting at the conference, they are expected to cover the costs on their own." (Lee)*

Theme 8: Isolation. International students often experience profound isolation, as they adjust to life far from the familiar support of family and friends. Building connections with locals can be challenging, leading to feelings of detachment and an increased sense of self-reliance. Polina highlights the pressure of navigating life where "everything depends on you." While empowering, this independence can be daunting, making routine challenges feel overwhelming and the adjustment process deeply personal and emotionally taxing.

> *"It's very hard to build up connections with locals, and you have to be totally independent. To build up your life based only on yourself because you are far away from your family and your friends, like everything depends on you. There is this kind of pressure, it's not external, but internal pressure that "I'm responsible for everything' and sometimes, independence with this pressure is not good when you are alone and away from your support system." (Polina)*

Insights from International Students

International students valued support services during their time abroad, particularly faculty counseling for homesickness and isolation, international offices for administrative help, and faculty-led workshops for connecting with peers and gaining insights. Despite their resources, language barriers and limited healthcare access remain issues. Students suggested ways universities could ease integration, including informal gatherings for new and senior students, which Polina noted would help ease anxieties. Lorenzo recommended more outreach to prevent isolation, and Ysa stressed the importance of accessible networking opportunities, like conferences and teaching roles, to support students' growth.

> *"I can recommend what the university can actually do for the fresh newcomers, to organize simple gatherings with senior students, especially for freshmen, to help them and make it easier for them to adapt, like they will have the opportunity to meet and ask senior students to reduce their anxiety. This will be a great way for them to ask questions because sometimes, as a student, you're just lost and you don't know who to ask, with this they can form connections with other students and have this kind of certainty and feelings of safety." (Polina)*

> *"I would recommend to the universities to try to incorporate more community outreach to other international students, in terms of providing activities, because group clamping is really a thing." (Lorenzo)*

> *"I would like to suggest, even though there are organizations, for example, ambassadorship or organizations by countries that are trying to organize international*

or events or academic for students to be join, I feel like it could be more improved in terms of giving each other sources for conferences and events that are related to the specific fields of students, especially PhD students, wherein other students can't get hold of. The same goes for teaching opportunities, because we are required to teach but there are only limited opportunities, it would be great to be given the opportunity to collaborate with other institutions." (Ysa)

In summary, although the recommendations of these international students do not solve every challenge they encounter, they offer meaningful guidance to ease the transition for future students. suggestions such as organizing peer support events, enhancing community engagement, and improving access to academic and professional opportunities can help reduce some of the common difficulties of adjusting to life abroad. While these ideas may not entirely address persistent issues like language obstacles or navigating healthcare, they highlight practical, student-informed actions that universities could adopt to foster a more inclusive and supportive experience for international students.

Discussion and Conclusion

The findings of this study reveal the complexity of intercultural engagement as experienced by international doctoral students in Hungary. Rather than being defined by a single dominant factor, students' challenges were shaped by a constellation of interrelated factors—cultural norms, institutional support, language accessibility, peer relations, and access to services, Language barriers undoubtedly played a significant role, but they were embedded in a broader social and structural context that shaped students' ability to adapt, connect, and participate fully in university life. The experiences of international PhD students in Hungary reveal a complex landscape of adaptation challenges that span cultural, social, and internal dimensions. Each of these areas contributed significantly to their overall adjustment process, underscoring the need for supportive infrastructure withing host institutions. In line with previous studies, language barriers present one of the most pressing difficulties, affecting access to services, healthcare, housing, daily communication, and academic engagement (Campbell & Li, 2008). As international students steer through unfamiliar bureaucratic systems, the lack of English-speaking professionals becomes an acute obstacle, emphasizing the importance of language accessibility in enhancing student experiences. While many Hungarian universities offer optional Hungarian language courses, these are often underutilized due to their voluntary nature in PhD/DLA programs. Moreover, the differences in interpersonal demeanour highlight the cultural dissonance many students feel. This finding aligns with Hofstede's cultural dimensions theory, which posits that individualistic societies like Hungary's may seem less approachable to students from collectivist backgrounds (Hofstede, 2011). These interpersonal challenges are not only about adaptation but also about finding belonging and connection in the host culture. The

sense of isolation that arises from cultural misunderstandings and limited peer relationships, particularly with local students, echoes findings from Gareis et al. (2011), who noted that such social divides can exacerbate homesickness and stress among international students. Structural barriers like securing affordable accommodation and navigating the healthcare system add further complexities while, limited accommodation options, compounded by competitive markets and language barriers, impose additional financial strain (Fincher & Shaw, 2009). These issues contribute to the unique and common experiences of international students in Hungary, reinforcing themes of cultural dissonance, the need for Hungarian language support in navigating essential services, social isolation, and financial pressures. These insights reflect the students' everyday realities and highlight the need for target support mechanisms to ease their transition and integration.

To address these challenges, this study offers actionable recommendation for Hungarian universities that could significantly enhance the international student experience. Language support is critical, with expanded translation services for essential resources like healthcare and accommodation poised to alleviate many difficulties. Hungarian universities should implement structured language courses where students are required to complete introductory language training as part of their academic program. Community-building initiatives, such as informal gatherings between first-year and senior students, could foster social integration and alleviate isolation, reflecting the importance of peer support as a central component of successful acculturation (Ward et al., 2020). Formal mentorship programs where local Hungarian students are paired with international students to assists in cultural and academic adaptation may also be a big step to intercultural engagement. Polish universities have successfully implemented such programs, leading to higher levels of engagement and retention among international students (The Association of Polish Universities for Internationalization, 2024). Furthermore, intercultural training for both students and staff could bridge cultural gaps, promoting inclusivity and mutual understanding. While these recommendations cannot eliminate all barriers, they provide a framework for easing international students' transition and fostering an inclusive university environment. Addressing structural issues such as healthcare accessibility and offering financial support for professional development opportunities could empower students to thrive academically and personally. Further research should explore how universities might implement these strategies effectively, assessing their impact on international student well-being and academic success. This study, therefore, contributes to a broader understanding of the multifaceted challenges international PhD students face and emphasizes the role of institutional support in enhancing student adaptation and success.

Acknowledgements

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Affective geographies of adolescent young people's wellbeing during the Covid-19 pandemic

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Abstract

The Covid-19 pandemic and measures put in place to contain the spread of Sars-Cov-2 virus have limited and changed the ways in which people around the world use space. In this paper, we look at how young people's affective geographies of wellbeing have been reconfigured by the Covid-19 pandemic. Building on visual and textual data from a photovoice workshop with fourteen adolescent young people (aged 15-18) from a high-school in North-West Romania held in the fall of 2021, we show how both domestic and public outdoor spaces were reshaped by the public health crisis and by measures put in place to control it. Our findings point to the fact that the relationship between digital and domestic spaces has become even more blurred through the incorporation of educational and socializing activities within digital-domestic spaces. Furthermore, we point to the reconfiguration of relationships between young people and non-human others, especially animals that they share domestic spaces with, as well as other household and family members. Finally, we show that adolescent young people came to claim the use of outdoor public spaces as a prosaic form of everyday resistance in their quest for wellbeing. Spaces such as hypermarket and gas station parking lots, (unused) school courtyards and deserted stadiums came to be used by young people as clandestine spaces in which to socialize and to do sports.

Keywords: young people, wellbeing, photovoice, affective geographies, Covid-19 pandemic

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Introduction

The Covid-19 pandemic and associated measures to control the spread of Sars-Cov-2 have affected the ways in which people across the world use space. Especially young people have come to be affected by these measures, with a direct impact on their mental health and wellbeing (McMellon & Maclachlan 2021; Sonuga-Barke & Fearon 2021), as well as on educational inequalities (Darmody et al. 2021; Donosso & Rothman 2020; Mitescu Manea et al. 2021), among many other relevant impacts. Lockdowns and other restrictions put in place to ensure physical distancing have likely changed how we use and how we relate to public space everywhere in the world (Honey-Roses 2020). Yet, these restrictions, albeit affecting large portions of the world's population, do not affect their wellbeing equally. Restrictions on which spaces can be used and what spaces are accessible to people during lockdown have been shown to have a clear impact on people's wellbeing, especially regarding access to green spaces (Poortigna et al. 2021). The use of public spaces, such as parks and open spaces, during the Covid-19 pandemic, has tended to reproduce the power configurations prevalent in society, furthering marginalization of the disempowered (Hoover & Lim 2021).

Adolescence has been described as a life stage in which young people are involved in practices of appropriating public spaces (Andersson et al. 2019), while being disempowered in fully taking ownership of and crafting their domestic spaces by their legal status as minors (Childress 2004). Therefore, we ask ourselves: What do the changes in how space could be used during the Covid-19 pandemic look like from the perspective of adolescent young people?

In this article, we focus on the reconfiguration of how adolescent young people used space during the Covid-19 pandemic, drawing out the significance of these processes for the reconfiguration of their social relationships and their sense of wellbeing. We approach this question from a perspective influenced by recent works on affective geographies of wellbeing (Schwanen & Atkinson 2015; Atkinson 2013; Andrews et al. 2014). We look at wellbeing not as a process located within the individual mind (Schwanen and Atkinson 2015, 99) or as an a priori defined normative desirable state of affairs (Andrews et al., 2014), nor as a discursive object with fixed boundaries (Scott 2015). Rather than this, we embrace the potential multiplicity of wellbeing and its collective potentialities towards a relational and situated account that views it as an 'effect of mutually constitutive interactions amongst the material, organic and emotional dynamics of places' (Atkinson 2013, 138), as they are experienced by young people in their everyday lives. In this we focus on how wellbeing might arise through affect in everyday life (Andrews et al. 2014). Thus we look at how young people photographically capture and discuss their affects in relation to wellbeing and to the situatedness and relationality of their contexts that involve both human, non-human and material others. Our effort is aimed at exploring new affective geographies of young people's wellbeing

that emerged in everyday life through the reconfigurations of spaces that adolescent young people experienced during the pandemic and how these are intertwined with affective ways of relating to wellbeing.

Our endeavour is also motivated by the fact that the affective geographies described in relation to Covid-19 have thus far focused primarily on grief and consolation related to the inequalities along which the unequal impact of the pandemic has been felt (Maddrell 2020; Ho & Maddrell 2021; Maddrell et al. 2021), while a more recent approach centers the intersectional differences in how the pandemic has shaped the relationship between wellbeing, space and women's experiences (Thorpe et al, 2023). Inspired by this approach, we ask how were other new affective geographies configured in the pandemic context? And how were these affective geographies related to wellbeing?

Moreover, our study consciously centers adolescent young people's perspectives, following a children's geographies approach that denies the dualism between nature and culture and gives special attention to the situation of children within relations of power (Holloway, 2013). We understand 'youth' as a liminal and ill-defined period that separates childhood and adulthood that is often represented as a period of 'transition', the apparent recognition of which depends on the ways in which spaces are inhabited and used by young people (Valentine 2003). Through this approach, we emphasize the de-normativization of youth as a period of transition from adult dependent childhood to independent adulthood. We also point to the fact that the pandemic has reshaped the opportunities for young people to become independent economic actors, e.g. by pushing already independent young adults into moving back home because of crisis induced lack of employment opportunities (Vehkalahti et al. 2021) and thus may lead to infantilizing narratives directed at people who were young during the pandemic.

While young people's quest for well-being during the pandemic by engaging in remote gaming activities for the purpose of socializing has received some scholarly attention (Bengtsson et al. 2021), as have the transformations of how forced leisure time – leisure time that has resulted as a consequence of restrictive measures – was being spent (Panarese & Azzarita 2021), the reconfigurations of young people's engagements with domestic and public space in their quest for wellbeing during the pandemic has been less studied. This is why in this paper, based on the results of a photovoice workshop with fourteen adolescent young people from a high school in North-West Romania, we address the question: How have young people engaged with space in their quest for wellbeing during the time of the Covid-19 pandemic?

Methodology

To answer this question, we will draw on the results of a photovoice workshop that was embedded in a wider active-learning (Wright 2015) oriented participatory research project with young people aged 15 to 18 that attend a high-school in North-West Romania.

Prior to data collection the study went through the ethical review of the Scientific Council of University Research and Creation of the West University of Timişoara and received a favourable notice (nr.46791/23.09.2021). Prior to participating in the research, the legal guardians of the participating young people were informed about the research and asked to sign an informed consent form endorsing the participation of the minors in the research. One participant who was of age at the beginning of the research activities signed the consent form himself. All other participants were given assent forms (supplementary to the informed consent forms that their legal guardians received and signed). The information in these forms was discussed with the participants and they formalized the assent procedure through signing the forms additionally to the forms signed by their legal guardians. All participants included in this study have provided assent and their legal guardians provided consent for participation in the research.

An initial compact series of workshops lasted for four days in the fall of 2021 and were conducted face-to-face in the event hall of the high-school. These were conceived as a kick-off event for further blended learning interactions, as well as potentially for future face-to-face workshops. Initially, fifteen young people, the vast majority of which were women, signed up to participate in the kick-off seminar with a view to remaining in the project. One of the attending young people decided to not continue in the project and did not participate in the photovoice project. The kick-off seminar was aimed at establishing a group of young people and inviting them to reflect on the topics of wellbeing and equity and the ways in which they intersect with their everyday lives, especially since the onset of the Covid-19 pandemic. The university based research team that organized the workshops with the endorsement of the school leadership consisted of six members (former) graduate students and faculty from the departments of educational sciences and psychology of the same university.

While the goal of involving and capacitating young people to take part in Youth-led Participatory Action Research (Ozer 2017; Ozer et al. 2013) was one of the drivers of the initial organization of the kick-off seminar, young people were also involved in the project as research participants (Ozer & Piatt 2017), that were encouraged to document, present, discuss and reflect upon their everyday experiences with educational inequity and wellbeing during the time of the pandemic and think about potential ways of transforming these experiences in the future (through peer support networks or other interventions). The rationale for involving them in this project was based on the fact that schools in Romania had been at around the date of the workshop fully closed for 22 weeks and partially closed for another 10 weeks since the initial onset of measures to control the spread of Covid-19 in Romania in mid-March 2020 (UNESCO, 2021), and that as a research team we assumed the impact on the everyday lives of young people in school had been significant, leading to reconfigurations of their human and non-human relations and the materialities of their everyday lives.

The photovoice workshop was divided into two parts. During the first, the young people were invited to reflect on their wellbeing during the pandemic and where and how

this (or the lack thereof) manifested itself visibly in their everyday lives. Visibility of these processes was essential as it allowed the photo documenting of wellbeing. The young people were invited to take photographs during two days and were then invited to upload them to a common closed facebook group. The photographs were taken with their own cell phones, as there were no participants that did not have access to these devices. Some of the participants chose to create collages using photographs that they had previously taken and this was accepted by the organizers, since it provided an opportunity to reflect upon a wider range of experiences. During the second part of the workshop (on the last day of the seminar), young people were encouraged to present their photographs or collages and discuss them with their peers. Fourteen young people took part in the discussions, while eleven people uploaded photographs onto the common group. The discussions were recorded with the permission of the participants and their legal guardians, the recording was transcribed and the anonymized transcription was used together with the photographs in the process of interpreting the data.

In interpreting the data the research team worked collaboratively in a two-cycled coding multitext thematic analysis, one of the research group members transcribed the recording and integrated the images with the transcribed text. The resulting word file was 43 pages long and included both text and images. The compiled file was then read by five coders that worked inductively on the first cycle of coding. The second cycle of coding was structured to identify theoretically salient topics in the inductive codes, that agreed upon in a meeting of the authors of this paper. In a final step, the final coding manual was applied to the entire transcript by members of the research team working on different themes identified collectively. The results were then put together and discussed once more after which this paper's first author produced the initial version of this paper. This approach can be read as a similar one to Kate Gleeson's (2020) polytextual thematic analysis for visual (and multimodal) data that applied inductive thematic analysis principles beyond textual analysis into visual analysis. .

The photovoice methodology developed by Wang and Burris (1997) involves asking people to photograph things that are relevant to their everyday lives and communities and then share and discuss the photographs with people in similar situations. From the very onset, photovoice methodology was designed to help breach knowledge asymmetries between community-outsider researchers and community-insider research subjects, as well as provide a platform for people to discuss their communities in their own terms and not those dictated by researchers' agendas. Similar to photo-elicitation (Cooper 2017), photovoice is responsive to childhood experiences and enhances children's participation in research. The same can be considered true for young people. Moreover, as has been shown for video-based research in health geography (Kaley et al. 2019), visual methods are more suitable for capturing the material, embodied and performed aspects of places.

The photovoice workshop we organized was centered on documenting young people's experiences during the pandemic from the perspective of how they related to

their wellbeing. From the beginning space and place were central concepts in the discussion with young people, photo mapping (Texeira & Gardner 2017) was proposed by the research group as an alternative to more 'traditional' approaches to photovoice but this was rejected by participants, who did not find the idea of generating a common map of their experiences related to wellbeing during the pandemic appealing. In retrospect, this was probably connected to the fact that many of the young people produced collages in which they explored their domestic settings, which they likely did not desire to include in a map.

The research team's motivation in including a photovoice workshop as part of the kick-off seminar for our YPAR project with young people attending high-school was that it would allow immersion into the everyday lives of participants, even in the effect that we would not be allowed to carry out the research face-to-face. Caragata and Liegghio (2020) propose using photovoice as a methodology for hybrid research in periods of physical distancing that allows for marginalized perspectives to be included in research during this time. This kept the possibility open to switch to an online research design if the face to face option became unattainable because of the evolution of Covid-19 case numbers and restrictive measures.

Moreover, as Lydia Plowman (2016) has shown, boundaries between 'home' and 'technology' are often blurred in research with children (and by extension young people) about their use of digital technologies. Technological use in domestic settings for leisure is a mobile, ubiquitous and invisible process which can more productively be investigated by including digital technologies in the research process and seeing them conceptually as part of the research process as they are an omnipresent part of young people's lives. If Plowman's observation was true before processes of digitalization exacerbated by the pandemic, this is likely even more relevant today. Furthermore, as Plowman (2016) convincingly shows, incorporating digital technologies into the research process allows a window into participating in the domestic everyday environments of young people from afar. As young people's wellbeing was likely to be strongly connected to their experiences at home, this methodology allowed us a glimpse at otherwise inaccessible domestic settings, as well as other relevant everyday life spaces beyond them.

Discussion

The remaking of relationships within the domestic-digital spaces and wellbeing

One of the advantages of using photovoice methodology affords researchers a window into personal experiences that are rarely accessible to researchers (Ciolan & Manasia 2017, 3). In our research, young people presented photographs of their bedrooms and houses from which they were taking part in online school. When presenting these photographs, young people explained how their relationships to space and to other people and non-human participants that they were sharing the space with had changed.

The remaking of the blurred boundary between the domestic and the digital space in online education

As Lydia Plowman (2016) has convincingly argued even before the pandemic, the boundaries between digital and domestic spaces were blurred from the perspective of how digital technologies were part of the domestic space of children, a conclusion that we found to be true for young people during the Covid-19 pandemic as well. These boundaries were reshaped to include one more relational dimension that already had become incorporated in the domestic-digital space before the pandemic but to a much more modest extent, namely participation in educational activities.

One young woman presented a picture of her in front of her laptop, showing us how she had organized her virtual social life when she could not go out to meet her friends:

The [...] picture is of how I would meet friends during the pandemic, on meet or facebook, facetime and other such things. Although we also spoke through messages, it wasn't like that face-to-face interaction and sometimes, well... the laziness.. to text and it came to be okay to see others like this.

Educational activities were also re-organized to be attended from a distance, generally from the domestic space. One of the young women also shared pictures of her writing desk that included a notebook set in front of her laptop showing the platform access she had to all of the classes that she was participating in. Another participant shared how the sides of her computer screen had been fully decorated with relevant information that she could read off from next to her screen during an oral examination during which she was made to keep her hands below her chin at all times. Another woman shared a photograph of a video conference call which she had to attend blind folded in order to participate in an oral examination so that the teacher would be sure she is not cheating. Other participants mentioned being asked to put their hands in front of their eyes to prove they are not reading off the information being presented.
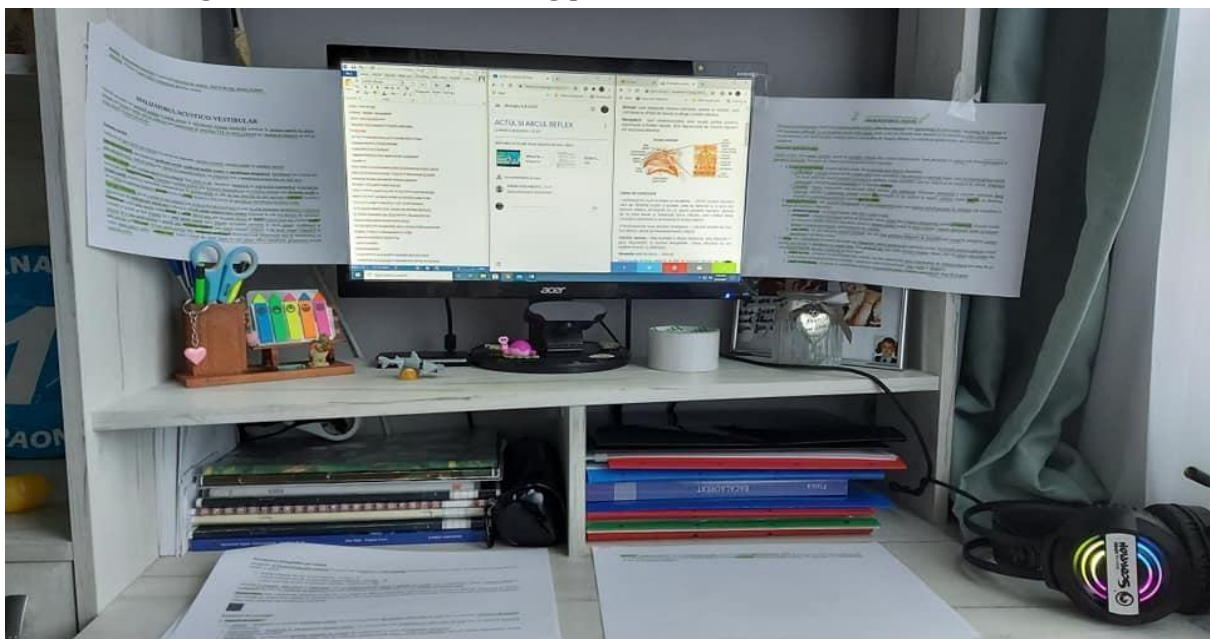

Image 1 Photography by participant

These practices point to how participation in educational activities from home fully transforms the domestic space, as well as partly the bodies of the participants according to the informal norms of educational interactions. High-school students are called to manage and display their bodies to perform honesty and transform the spaces from which they participate in order to fit their needs.

The domestic space is thus re-inscribed with the informal practices of school education – connected to teachers' attempts to control the bodies of students and the spaces inhabited by them from afar, pushing students to performatively display honesty during examinations. Students, aware of the gaze through the computer, reshape the space to enable their own practices, which involved cheating while performing honesty at the same time. As one of the students shared with us, she had learned to set the videoconferencing program on 'freeze' and would then be able to look up information on the internet without appearing to do so. Similarly, other participants shared a picture of how they would participate in exams in online school from the same room, while appearing to be alone in the room in order to not raise suspicions:

[The other picture] is from a test in geography when we were with our laptops back-to-back [...]. This was a subject where you needed to learn by heart and no one would, and even if you would, [the teacher] would ask things that we had not covered and you had no chance [of passing] . So the laptop was open on google to look things up and we would just set the application on freeze from the forehead and would look up the things... and my answer didn't load and so he asked for a picture of the laptop to see the number of points. And I took that picture and the other person's laptop was visible, but [the teacher] did not realize, [...] it was okay.

These sets of practices allow us to see how the relationship between domestic and digital spaces is reconfigured thus enabling differentiated forms of participation in the informal practices of online education.

The reconfiguration of relationships within family households

The reconfiguration of the relationship with domestic space and remote localities

A house in the countryside was presented by one of the participants as being 'the place where she could distance herself from all her problems and find herself again'. She described living in a house in the countryside as a 'privilege' and contrasted this to the experience of the nearby larger city that was much more affected by the pandemic which she perceived as an altogether 'different world'. She also added a photograph of a green space to the collage that included the photo pointing to the importance of accessing private green spaces during restrictive measures as a factor of wellbeing also confirmed by other research during this time (Poortigna et al., 2021). In this account, a rural country house becomes a desirable place to spend large periods of time, the quality of the domestic environment and the access to green spaces become important avenues in the

quest for wellbeing. Moreover, the larger city is inscribed as a perceived primary site of the public health crisis from which remote localities appear to be more protected.

In the same vein, choosing places of escape to spend time with other young people was also part of the reconfiguration of the use of domestic space, especially in remote localities. Several participants from the group had in the past been together at an outdoor barbeque in the garden of the countryside house of one of the participants. When discussing why she had chosen to share this particular image of three people attending an outdoor barbeque in the context of the workshop, one of the participants agreed that it was safer to meet people outside to socialize, but also the place where people could be met mattered favoring remote localities:

It's not in town, because in town someone can see us and we end up with the police there.

Thus relationships with domestic spaces were reconfigured in the quest for well-being centering remote domestic spaces with green areas that would allow for personal comfort, but also for safer interactions both in medical terms and in terms of escaping police surveillance during restrictive measures.

The reconfiguration of family relationships within the household

Family relations came to be reconfigured during this period of time with family members spending more time together during the periods of harsh restrictions on movement. One of the participants pointed out that during the period of meals being shared in the family, which she originally disliked but then came to appreciate:

I wasn't at all happy when my mother introduced this rule that we should all come to the table and I disliked it a lot and said 'why do I have to come to dine with you?', but afterwards it all came to be very nice.

As Becky Tipper (2011) has convincingly shown, children regard animals as part of their families when they live together with them. This significance has likely increased during the pandemic, since domestic relationships became more dominant in young people's everyday lives through the large amounts of time spent at home, while being deprived of other activities and relationships. Relationships with animals thus become important relationships for individual wellbeing, almost a proxy for relationships with peers and an opportunity to break very monotonous and disengaged routines:

Maybe because my parents are more strict... all that I did was sleep, spend time in my bed and in the second picture there is the laptop and then in the third picture that is the most representative one [for the topic of wellbeing], in that time I was feeling more anxious and I got a cat. And I look at my colleagues, how they spent the time and I feel like the time has passed me by...

Relationships with animals also were shaped by the possibility of taking animals outside as a legally legitimate reason to leave the house during lockdown, relationships with animals thus became crucial for finding the motivation to leave the house and for legitimately accessing public space:

[In the picture there is] the reason why I would come to leave the house with the dog … and I had to take him out, I had no other excuse [to leave the house] and to explain my general daily state during the pandemic: [it was about] sleeping all the time or being lazy and spending the entire day in bed.

Thus relationships with pets became qualitatively different and were understood as crucial for the wellbeing of the young people through allowing them to escape the drudgery of domestic life from which they felt disengaged. Similarly, the reconfiguration of human social relationships within the family unit came to be reconfigured in this way due to facing common challenges of finding a way to leave the house:

The photo with the declarations for the pharmacy has an interesting story because I wasn't going out with a friend or a colleague, but with my dad, because he also couldn't take it anymore [being stuck at home] [...] and the funniest part is that it was not my idea, it was my father's idea to write the declarations with pharmacy and then go out on the street and ride around [outside the small town where we lived].

The reconfiguration of relationships between human and non-human household members was intertwined with the differentiated ways in which each member could use both the domestic space and could gain access to outdoor public spaces. Space was more than a mediating force, but rather an agent in the reconfiguration of social relationships within households that sought to contribute to the household's members and specifically to the young people's sense of wellbeing in the present context.
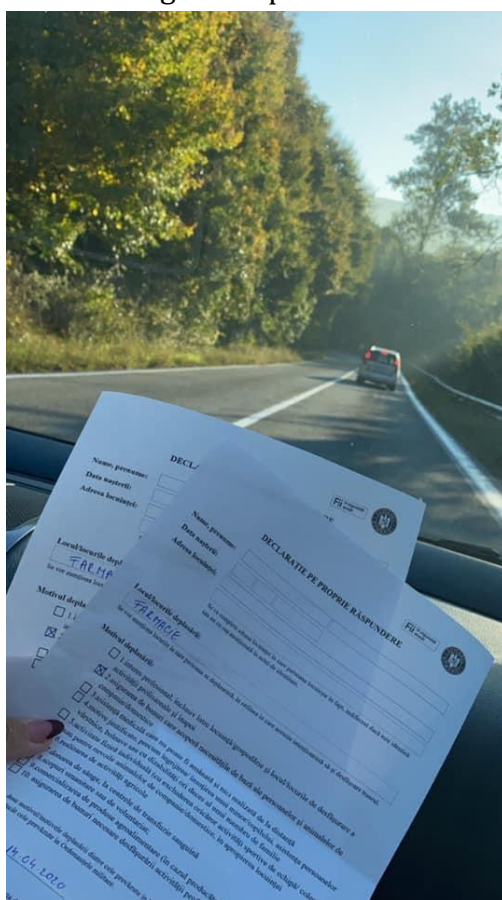

Image 2 photo by participant

Clandestine use of outdoor social space as a 'weapon of the week'

As the measures to prevent the spread of Covid-19 involved restrictions related to the ways in which people could use public spaces, discouraging meeting people outside of one's own household, young people found subversive strategies to continue their social lives despite these restrictions. In this process, young people turned to certain outdoor spaces as they enabled social gatherings, while minimizing both the risks of being reprimanded by the police enforcing restrictions and that of Sars-Cov-2 infection.

Their use of outdoor spaces for social gatherings as opposed to more strict respect for restrictions can be read as a form of everyday forms of resistance, as a 'weapon of the weak' in James Scott's (1985, especially Chapter 2) terms. Young people engaged in these prosaic yet constant struggles with parents, the police and other forms of authority such as security guards and school principals. The goals for which they engaged in these struggles related to their right to use outdoor spaces and were immediate: they sought places where they could spend uninterrupted time together with their peers, an activity that increased their sense of wellbeing by helping them avoid the drudgery of domestic life.

The parking lot of a local hypermarket found its way into several of the young people's submitted photographs. One of the young women captioned the picture: "the escape from 'prison' ". Another participant described her use of outdoor spaces to meet her friends as follows:

Me, like other people as well, I kept staying hidden behind [the name of the hypermarket], behind tall buildings , in the [name of the pub terrace], that's about it.

The participants described the parking lot as a space in which they spent a considerable amount of time, also because there were not a lot of people there and the police would not enter that space, allowing them to escape the boredom felt in domestic spaces without the anxiety of negative consequences. Most mentioned meeting just their close friends in this space, one of the young people explained that this was a space where large groups could also gather without being noticed. The space of the parking lot thus came to be used by the young people to re-create a space for social gatherings as an alternative to the usual spaces that they would use.

An outdoor stadium was used by two of the participants to go running during the first months of restrictions. One of them saw this as a significant way of escaping the drudgery of domestic life that she felt was not specific to her age or interests. The stadium thus became a space that made the boredom in domestic spaces bearable during the initial toughest restrictions, but since the use was only possible in a clandestine manner, it was discontinued when limited, yet official sporting activities resumed:

Yes, I have a [picture of a] stadium. I really had nothing else to do, but sit on a balcony and watch people, like an old lady. The stadium [was the place connected to wellbeing for me] but then it was closed. [Other participant who had accompanied her]: And the guard picked on us, said it was only open to athletes now. [first participant:] So it was only open for athletics and there was nothing we could do.

Image 3 Photo by participant

Similarly, school courtyards were also entered through holes in the fencing and used as meeting places. This was not only true of the courtyard of the high-school where our research was conducted, but also of another high school in a nearby town, where one of the participants lived. Thus the ordinary social activities of everyday school life were carried out in a clandestine manner during the times of social distancing and ordinary spaces were accessed because of the imperfections of infrastructure allowing access where this was not normally allowed:

Yes, there at the high school from [name of town]. I was lucky since I live quite close to it and I could go out. I know that the schools were closed… but I think there was something broken at the door of the sports field and they didn't have a chance to fix it [before restrictions started] and we had the privilege of going out on the sports field and we would hide. Now we can no longer get in because they fixed the door. [Before] we used to be able to go in the back on the sports field and stay there. It was more difficult to leave without being caught, but we wrote our declarations and all [paperwork attesting the right to leave the house].

The use of outdoor spaces for informal social interactions with other students from the school also happened in spaces that had been used for skipping school during face to face education. A pub with a terrace was then used to attend online school or to again skip school during the rare periods in which face-to-face education was briefly resumed:

This is a picture from when we used to go there [to the pub with the terrace] during school. [Facilitator: Online school or face to face?] Both, I think the entire school was there.

Thus, the blurry boundaries between skipping school and online school are visible in the informal encounters of students in commercial outdoor spaces in which school-related informal social interactions such as those characteristic of skipping school are recreated irrespective of whether or not face-to-face or online education was taking place at the moment of the interaction.

Traveling as a disruptive practice supporting wellbeing

Participants also submitted photographs of their travels during the pandemic months. A photo showing two young men bathing in a lake a couple of tens of kilometers away from the city where the high-school was located was captioned: 'Two walking corpses that got bored of restrictions and went to take a bath'. The photograph and the caption pointed to the fact that the young people attributed a great deal of importance to these outings when thinking about their wellbeing. Unsurprisingly, escaping the drudgery of an everyday life governed by restrictions was seen as making a huge difference to one's well-being. Interestingly, this points to a wider question of how boredom, recently documented as the affect of social exclusion (O'neill, 2017), became one of the dominant affects of the pandemic, especially for adolescent young people.

Those who travelled to the seaside during summer or to the mountains during winter submitted pictures of this time, giving details of how they had been able to enjoy these types of travels, stressing the fact that the activities took place in outdoor spaces. But even small events like going to a parking lot and setting up a hammock were seen as very significant since they were spaces where young people went to socialize.

Image 4 Photo by participant

During the photovoice workshop, while listening to the other people's accounts of their experiences during lockdown, one of the participants concluded that her impossibility to partake in these type of activities greatly affected her sense of wellbeing:

In these two years I don't know what I did, I have not made a single memory, I mean it's very sad [...] [Facilitator 2: And if now there would be again a lockdown would you act in the same way? Or differently?] No, no, I would join in somehow... I would not want it to be again in the same way for anything in the world...it was so bad.

Subversive practices involving social gatherings in outdoor spaces were key to young people's sense of wellbeing during periods of restrictions. The use of space made the recreation of informal school connected social networks possible. Wellbeing for young people was not connected primarily to accessing education, but to accessing the informal structures that attending school in a face-to-face format makes possible.

Conclusions

Adolescent young people's geographies of wellbeing were reconfigured during the pandemic in several significant ways. On the one hand, relationships with domestic spaces, as well as within domestic spaces were reconfigured significantly. Most importantly, the blurry boundary between domestic and digital environments in young people's everyday lives described by Lydia Plowman (2016) has now become even more blurry, since a large part of both educational and socializing activities of young people have moved into the digital space, while being attended from the domestic space. These blurry boundaries were visible in the reconfiguration of digital space for education, but also in that of the domestic space that was re-arranged to fit both the formal and informal practices and needs associated with school education. This points us to an opportunity to rethink the blurry boundaries between digital, domestic and educational spaces and further reflection on these issues from the perspective of how education plays into affective geographies of wellbeing is necessary to fully grasp this transformation.

From a different perspective, remote domestic spaces have become more desirable to young people, especially when they allow access to green areas that can be used for relaxation, as well as for outdoor socializing activities. Social relations within domestic space have increased in intensity and significance, with both human and non-human household members. Animals in particular were seen as particularly relevant partners in the young people's quest for wellbeing. This points to the opportunity of thinking further through how human – animal relationships are being transformed during the pandemic and how this relates to affective geographies of wellbeing.

Finally, the appropriation of outdoor public spaces by adolescent young people was a significant pathway to wellbeing for the young people involving an everyday struggle – akin to those described by James Scott (1985) in *Weapons of the Weak*. Young people engaged in these struggles for space not in a reckless manner, since often they were mindful of risks to themselves but also primarily to the health of their family members, but in a reflected and responsible manner. They met in often deserted outdoor spaces

that had previously belonged to their everyday lives: school courtyards, hypermarket parking lots and backstreets – places where they could be safe from prying eyes, while still retaining contact with their peers. This points to an affective geography of clandestine spaces as sites of young people's wellbeing that is not new, but that has taken on an increased importance during the Covid-19 pandemic.

Acknowledgements

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Book review

Revisiting Enduring Questions in a Changing Educational Context: A Review of the Handbook of Research on Teacher Education.

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Abstract

The Handbook of Research on Teacher Education: Enduring Questions in Changing Contexts (Third Edition), edited by Marilyn Cochran-Smith, Sharon Feiman-Nemser, D. John McIntyre, and Kelly E. Demers, offers a comprehensive and critical exploration of foundational issues in teacher education. Structured around nine enduring questions, the volume examines the purposes, content, institutional contexts, recruitment and retention, diversity, professional learning, governance, research, and outcomes of teacher education. This edition departs from traditional handbook formats by organizing content through thematic sections, each combining framing essays, historical and contemporary artifacts, and diverse commentaries. The collection draws on multiple philosophical, historical, empirical, and critical perspectives to interrogate longstanding challenges in teacher education. It addresses contemporary concerns such as preparing culturally responsive teachers, supporting democratic and equitable schooling, and advancing teacher identity formation. While the handbook synthesizes a range of scholarly perspectives and includes discussions of research genres (quantitative, qualitative, and critical), it is primarily analytical and conceptual rather than empirical. It does not present original data or formal meta-analyses, and its focus is largely centered on the U.S. context, with limited engagement in international comparative analysis. Similarly, while it critiques standardized evaluation systems and explores the political dimensions of teacher education policy, it stops short of offering a unified framework for assessing program effectiveness. The volume's emphasis lies in its theoretical richness, historical grounding, and inclusive dialogue among educators, scholars, and policymakers. Future research could build on these foundations by incorporating developments in digital pedagogy, interdisciplinary approaches, and cross-national comparisons. Positioned within broader educational research and policy discourses, the handbook remains a vital resource for scholars and practitioners committed to equity, inclusion, and the continuous reimagining of teacher education in a changing world.

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.Introduction

"Teaching is the profession that lays the foundation for all other professions."

Teacher education research shapes pedagogical practices, policies, and institutional frameworks. As the field continues to evolve in response to socio-political changes, there is a growing need for research that critically interrogates the foundations of teacher education while offering new insights.

The Handbook of Research on Teacher Education: Enduring Questions in Changing Contexts (Third Edition) thoroughly examines key issues in teacher education research, policy, and practice. Edited by Marilyn Cochran-Smith, Sharon Feiman-Nemser, D. John McIntyre, and Kelly E. Demers, this volume aims to promote discussion on fundamental questions in teacher preparation. Teaching is recognized as a vital profession that influences all other fields by equipping individuals with essential knowledge, skills, and dispositions. The well-known phrase, "Teaching is the profession that lays the foundation for all other professions," highlights the important role of the teaching profession in shaping society's future and echoes the main themes of this handbook, stressing teacher education's powerful impact.

Teacher preparation programs equip educators with pedagogical skills and foster critical thinking, ethical responsibility, and intercultural competence—qualities applicable across all fields (Cochran-Smith, Feiman-Nemser, & McIntyre, 2008). This perspective emphasizes the importance of teacher education in developing individuals who contribute to various sectors, reinforcing the idea that the teaching profession serves as the foundation for societal progress. The Handbook of Research on Teacher Education: Enduring Questions in Changing Contexts (Third Edition) thoroughly examines the challenges, debates, and ongoing developments in teacher preparation.

Why did I choose to review this book?

Although the Handbook of Research on Teacher Education was published in 2008, its conceptual relevance remains strong, especially given current reforms and ongoing challenges in teacher education across developing countries. Core themes such as teacher learning over time, diversity, equity, and the role of educational settings continue to be central to policy and practice, particularly in developing countries, where educational transformation is still ongoing. By revisiting these themes, this review offers a timely reflection that links longstanding scholarly questions to present-day realities, providing insights for both national and regional audiences navigating complex reform environments.

Additionally, it addresses fundamental issues in teacher education that align with my research interests and makes a timely contribution to ongoing debates in the field. Moreover, it offers a comprehensive and critical analysis of teacher education. It also focuses on core topics related to my PhD specialization in teacher education and higher education studies. Since my research centres on pre-service teachers' intercultural

competence and its internalization versus institutional compliance, this book provides valuable insights into the broader educational landscape, including how teacher preparation programs influence knowledge, attitudes, and behaviors. This aligns closely with my area of study and provides important information about how these programs shape future educators.

The handbook explores ongoing debates in teacher education, including the influence of institutional expectations, the role of training in shaping teacher identity, and the factors that predict teaching effectiveness (Cochran-Smith, Feiman-Nemser, & McIntyre, 2008). These themes align with my research, especially the investigation of how teacher education promotes intercultural competence, whether as a deeply internalized value or simply a response to institutional demands. By reviewing this book, I connect with established research that helps contextualize my study within the broader conversation on teacher preparation, pedagogical reform, and higher education policies. Therefore, this book acts as a key resource, emphasizing the importance of my research while offering a wider framework for analyzing how teacher education develops culturally responsive and reflective practitioners.

Key summaries of the book

The book is structured around nine fundamental questions that define the field of teacher education. Each question addresses key concerns related to its purpose, content, settings, recruitment, diversity, learning, policy, research, and effectiveness. This critical review evaluates these nine themes, identifying their strengths, limitations, and implications for future research and practice.

The Purpose of Teacher Education: What's the Point?

At its core, teacher education is about more than just transferring knowledge; it is about shaping educators who will, in turn, shape future generations. This section explores the philosophical and societal purposes of teacher education, drawing on the works of John Dewey, W.E.B. Du Bois, and Jane Addams, who emphasized the need for teachers to be critical thinkers, democratic citizens, and social change agents. The book presents a compelling argument that teacher education must go beyond technical training to foster civic engagement and ethical responsibility.

While the handbook offers a rich theoretical exploration of the moral and civic dimensions of teacher education, it includes limited empirical evidence measuring the direct impact of teacher preparation on civic engagement. Additionally, its U.S.-centric focus leaves out comparative perspectives on how teacher education is conceptualized and enacted in diverse cultural and political contexts. To strengthen this line of inquiry, future research should pursue cross-national studies that examine how various societies define the purposes of teacher education and how these definitions shape educational practice.

Teacher Knowledge and Capacities: What Should Teachers Know?

The question of what teachers should know has long been debated. Should teacher education focus on subject-matter expertise, pedagogical skills, or social-emotional competencies? This section argues that teachers need well-rounded skills, including content mastery, pedagogical proficiency, and cultural competence. The emphasis on social justice, equity, and the ability to work with diverse learners is particularly notable, reflecting the growing need for teachers to navigate multicultural and multilingual classrooms.

Although it has strengths, this section does not adequately cover emerging areas like digital literacy and the use of educational technology in teacher preparation. As classrooms become more technology-focused, teacher education programs need to include training in digital pedagogy. Future research should examine how technology can improve teacher training and lead to better student learning outcomes.

Institutional Settings for Teacher Education: Where Should Teachers Be Taught?

Recently, the debate has intensified over where teachers should receive their training, in universities, schools, or alternative certification programs. While traditional university-based teacher education programs provide robust theoretical foundations, they often face criticism for their lack of practical classroom experience. On the other hand, school-based and alternative programs (e.g., Teach for America, professional development schools) provide hands-on training but sometimes lack rigorous academic grounding.

While the book thoughtfully examines the strengths and limitations of various teacher education models, it does not engage in comparative analysis across national contexts. Although the volume includes occasional references to international examples, such as Finland and OECD benchmarks, its primary focus remains on U.S.-based systems. Future research would benefit from a systematic global comparison of teacher education models to identify adaptable best practices and inform more culturally responsive policy and program development.

Teacher Recruitment and Retention: Who Teaches? Who Should Teach?

A growing body of research confirms that teacher quality is a key factor in student achievement. However, recruiting and keeping highly effective teachers remains a major challenge, especially in underserved and high-need communities.

The handbook points out barriers to building a diverse teaching workforce, including systemic hiring biases, limited financial access to teacher preparation, and cultural perceptions that affect career choices. A common concern discussed is teacher attrition, with many educators leaving within their first five years. While the book notes financial difficulties and lack of institutional support as the main reasons for turnover, it offers limited focus on policy efforts that have successfully improved retention. Future research should focus on evaluating financial incentives, mentorship programs, and career advancement options to foster a stable, diverse, and high-quality teaching workforce.

Diversity, Equity, and Inclusion in Teacher Education: Does Difference Make a Difference?

The growing diversity of student populations demands culturally responsive teaching, yet many teacher education programs remain rooted in Eurocentric pedagogies. This section makes a strong case for the need to integrate diversity, equity, and inclusion into teacher education curricula. It critiques the lack of representation of teachers of colour and highlights the importance of training all teachers to work with students from diverse racial, linguistic, and socioeconomic backgrounds. Although the section strongly addresses race and ethnicity, it gives comparatively less attention to intersectional issues such as gender, disability, and socioeconomic background, even though these issues are still acknowledged. Future research should explore how teacher education can prepare educators to address multiple, overlapping forms of classroom marginalization.

How do teachers learn to teach over time?

Teaching is not a static profession; it requires ongoing learning, critical reflection, and adaptation to changing educational settings. This section of the handbook highlights the importance of mentorship, professional learning communities, and reflective practices in fostering teacher development. It states that pre-service education, while essential, is not enough on its own and must be supplemented by continuous professional development to achieve lasting impact. Although these points are compelling, the section pays limited attention to other models of teacher learning. As digital platforms play an increasingly vital role in professional development, future research should compare the effectiveness of virtual learning environments with traditional in-person training to better guide teacher education in a digitally connected world.

Authority and Policy in Teacher Education: Who's in Charge?

The governance of teacher education is inherently political, involving competing interests among governments, accreditation bodies, universities, and other stakeholders. This section of the handbook examines these tensions, especially the conflict between calls for standardization and the need for flexibility in teacher preparation. While the discussion provides a thorough look at U.S.-based policy debates, it does not include a comparative analysis of accreditation systems in different international contexts. Future research could benefit from exploring governance structures in countries with high-performing teacher education systems to identify effective and equitable models' oversight.

Research in Teacher Education: How Do We Know What We Know?

Teacher education research uses various methods, including quantitative, qualitative, and critical approaches. While quantitative studies often measure teacher effectiveness through metrics like student achievement scores, qualitative research offers deeper insights into teacher identity, pedagogical reasoning, and classroom dynamics.

The handbook highlights that no single method is enough and promotes multi-method approaches that combine statistical data with contextual understanding. However, it does not include formal meta-analyses of existing studies, which could strengthen its empirical base. Although meta-analyses are rarely found in conceptual handbooks, adding them to chapters on teacher effectiveness, program evaluation, or learning outcomes would enhance the evidence base without compromising the book's analytical goals. For policymakers and researchers, especially in developing countries, such a synthesis could provide clearer guidance for evidence-based decision-making.

The Effectiveness of Teacher Education: Evaluating Its Impact

This section of the handbook questions the dominance of standardized test scores as the main way to measure teacher education effectiveness. Instead, it stresses the importance of developing broader, more contextually relevant indicators that capture the complex goals of teacher preparation. Kennedy et al. critique the limitations of test-based accountability systems and explore value-added models and longitudinal studies as alternatives. While these tools provide some insights, they are not enough on their own. The authors support multidimensional, context-aware evaluation methods that better match the moral, civic, and pedagogical goals of teacher education. The handbook does not offer a single evaluative framework, despite including empirical studies. Instead, it calls for combining quantitative and qualitative methods to evaluate how well programs prepare reflective, equitable, and adaptable teachers.

Summary

The Handbook of Research on Teacher Education: Enduring Questions in Changing Contexts (Third Edition) is a thorough and authoritative resource in the field of teacher education. Edited by Marilyn Cochran-Smith, Sharon Feiman-Nemser, D. John McIntyre, and Kelly E. Demers, the book is organized around nine enduring questions that explore the key aspects of teacher education: its goals, knowledge foundation, environments, participants, learning methods, diversity, governance, research traditions, and effectiveness.

The handbook brings together leading scholars to provide rich conceptual analyses, critical perspectives, and reviews of empirical literature. Instead of presenting original empirical research, it reflects on research findings and the paradigms that shape them. It engages with a range of methodologies—quantitative, qualitative, and critical, mainly through synthesis and critique. While it references case studies, longitudinal research, and policy debates, the volume does not adopt a prescriptive or unified evaluative framework. Rather, it highlights the complexity, contextuality, and philosophical diversity that influence teacher education.

A recurring theme throughout the book is the moral and civic responsibility involved in teacher preparation. Contributors like Cochran-Smith, Zeichner, and Ladson-Billings highlight the importance of reflective, culturally responsive, and socially engaged teaching. Discussions deeply explore issues of teacher identity, political context, and

social justice. However, the geographic scope remains mostly U.S.-focused. While international references such as Finland and OECD metrics are included, the handbook does not pursue systematic global comparative analysis.

In its section on effectiveness, the book criticizes narrow evaluation models that focus solely on standardized testing. It discusses alternative methods, including value-added models and qualitative assessments, but does not endorse any specific evaluative framework, aligning with the editors' view that evaluation should adapt to different contexts and purposes. While comprehensive in exploring fundamental questions, the handbook offers limited coverage of emerging areas such as digital pedagogy, teaching, and technology-based education. These are promising directions for future research. Overall, the Handbook remains a key resource for researchers, educators, and policymakers, valued for its conceptual depth, thematic structure, and thoughtful engagement with longstanding and evolving questions in teacher practice education.

Conclusion

The Handbook of Research on Teacher Education (Third Edition) provides a detailed and nuanced overview of the changing field of teacher education. Its structure, around nine key questions, offers a clear yet flexible view of various philosophical, research-based, and policy aspects of preparing teachers. The editors avoid giving prescriptive answers, instead presenting a diverse range of perspectives that highlight the field's complexity and vitality. A major strength of the volume is its thoughtful critique of basic assumptions about teacher knowledge, learning, and accountability. Rather than promoting universal models, the handbook stresses the importance of context, diversity, and equity. It advocates for teacher education that is not only supported by evidence but also morally and socially responsive, equipping educators to thoughtfully navigate increasingly complex and contested educational environments.

The editors conclude by highlighting the importance of continually questioning these persistent issues as educational settings change. They advocate for openness to new theoretical frameworks, interdisciplinary research, and varied methodologies that address shifting political, cultural, and technological landscapes. Although the volume mainly concentrates on the U.S., its conceptual basis remains relevant for international adaptation and comparative study. It mentions international examples like OECD benchmarks and practices in Finland but does not conduct a comprehensive global comparison. Additionally, while emerging fields such as digital pedagogy and global teacher mobility are only briefly discussed, this reflects the publication date (2008) rather than an oversight. Its lasting significance lies in encouraging ongoing questioning, critique, and reimagining of teacher education as a profoundly intellectual, ethical, and socially active pursuit.

Although the handbook predates the COVID-19 pandemic, many of its core themes, such as reflective practice, teacher collaboration, and responsiveness to diverse learning environments, remain highly relevant. The pandemic has brought significant changes to

the field, including increased digitalization, the rise of hybrid and remote instruction, and a greater focus on inclusivity and adaptability. These shifts have created both challenges and opportunities, especially for low-resource and underserved educational settings. While the handbook does not directly address these developments, its focus on complexity, justice, and responsiveness continues to offer valuable guidance for post-pandemic educational reform. For scholars, practitioners, and policymakers in both developed and developing countries, the volume remains a foundational resource. As education systems face growing inequality, teacher shortages, and rapid technological change, future research and practice will need to build on the handbook's legacy, integrating interdisciplinary approaches, global perspectives, and innovative pedagogies to create more just, inclusive, and resilient systems of teacher education.

Reference

Cochran-Smith, M., Feiman-Nemser, S., McIntyre, D. J., & Demers, K. E. (2008). *Handbook of research on teacher education: Enduring questions in changing contexts*. Routledge.