

Exploring Teachers' Awareness of Transformative Learning and Its Impact on Teaching Practices

Dadi Mulyadi^{1*}, Della Amelia², Mario Emilzoli³, Mohammad Nazwan Nurrohman⁴, Shabran Ghazi Nabil Firly⁵ 

^{1,2,3,4,5} Educational Technology, Universitas Pendidikan Indonesia, Bandung, Indonesia

ARTICLE INFO

Article history:

Received August 13, 2024

Accepted October 15, 2024

Available online October 25, 2024

Kata Kunci:

Praktik Mengajar, Pembelajaran Transformatif, Pendidikan untuk Pembangunan Berkelanjutan

Keywords:

Education for Sustainable Development, Teaching Practice, Transformative Learning



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ABSTRAK

Kurangnya pemahaman guru terhadap prinsip-prinsip pembelajaran transformatif menjadi tantangan utama dalam menciptakan pembelajaran yang inovatif dan berpusat pada siswa. Penelitian ini bertujuan untuk membandingkan tingkat pemahaman guru terhadap prinsip-prinsip pembelajaran transformatif berdasarkan kategori tertentu serta menguji korelasi antara pemahaman tersebut dengan praktik pengajaran mereka. Penelitian ini menggunakan pendekatan kuantitatif dengan metode deskriptif eksplorasi dan korelasional. Sampel penelitian terdiri atas 103 guru SMP dan SMA yang dipilih secara acak, yang terdiri atas 50 perempuan dan 53 laki-laki. Data dikumpulkan melalui survei daring menggunakan kuesioner terstruktur dengan 46 pertanyaan. Analisis data dilakukan menggunakan teknik statistik deskriptif dan inferensial. Hasil penelitian menunjukkan bahwa mayoritas guru memiliki tingkat pemahaman yang rendah atau sedang terhadap prinsip pembelajaran transformatif. Guru yang lebih memahami prinsip-prinsip ini cenderung lebih sering menerapkan pendekatan transformatif dalam pengajaran. Namun, tidak ditemukan perbedaan signifikan berdasarkan jenis kelamin, kelompok usia, atau pengalaman mengajar. Penelitian ini menyimpulkan bahwa diperlukan program pengembangan profesional yang intensif dan berkelanjutan untuk meningkatkan pemahaman dan keterampilan guru dalam menerapkan pembelajaran transformatif. Program ini harus mencakup pelatihan konseptual, praktik reflektif, serta dukungan kolaboratif yang relevan untuk mendukung implementasi di kelas.

ABSTRACT

The lack of teachers' understanding of transformative learning principles poses a major challenge in fostering innovative, student-centered learning. This study aims to compare teachers' levels of understanding of transformative learning principles across specific categories and examine the correlation between their understanding and teaching practices. The study employs a quantitative approach with exploratory descriptive and correlational methods. The sample consisted of 103 junior and senior high school teachers, randomly selected, comprising 50 females and 53 males. Data were collected through an online survey using a structured questionnaire with 46 questions. Data analysis was conducted using descriptive and inferential statistical techniques. The results revealed that the majority of teachers demonstrated low to moderate levels of understanding of transformative learning principles. Teachers with greater understanding tended to implement transformative approaches more frequently in their teaching practices. However, no significant differences were found based on gender, age group, or teaching experience. The study concludes that intensive and continuous professional development programs are needed to enhance teachers' understanding and skills in applying transformative learning. These programs should include conceptual training, reflective practices, and collaborative support to facilitate classroom implementation.

1. INTRODUCTION

We have witnessed rapid changes in technology and societal values over the last two decades, yet our educational approach has remained slow to adapt to these changes. For instance, despite growing global awareness and emphasis on sustainable development, the integration of Education for Sustainable Development (ESD) into the national curriculum has been sluggish. Many schools continue to prioritize

conventional subjects and traditional teaching methods, often neglecting critical topics such as environmental sustainability, climate change, and social equity (Christie et al., 2015; Cranton, 2023). This slow adaptation is evident in the limited incorporation of sustainability concepts in classroom discussions and the lack of practical, project-based learning activities that promote sustainable practices (Ekamilasari & Pursitasari, 2021). As a result, students may graduate without a thorough understanding of the importance of sustainability and the skills needed to contribute to a more sustainable future. To address this gap, our education system needs to adopt more adaptive educational approaches. One such approach is transformative learning, which encourages critical thinking, adaptability, and a commitment to lifelong learning. Transformative learning not only prepares students to navigate and thrive in a constantly evolving world but also empowers teachers to integrate Education for Sustainable Development (ESD) into their practices, thereby fostering a more informed, capable, and resilient generation.

Transformative learning as it was defined as a paradigm shift in how individuals perceive and interpret their experiences (Mezirow, 2000). This definition emphasizes the transformation of problematic frames of reference, which are essentially the deep-seated assumptions and expectations that shape our understanding of the world. By making these frames of reference more inclusive, discriminating, open, reflective, and emotionally able to change, transformative learning aims to foster profound changes in individuals' perspectives and behaviors. It represents a powerful approach to education that promotes deep, meaningful change in individuals' perspectives and behaviors. At least there are 4 core components that build up transformative learning, namely critical reflection, disorienting dilemma, rational discourse, and action (Mezirow, 2018; Taylor, 2007). Through these four core components, transformative learning can lead to significant personal and professional growth, both for teachers and students. Transformative learning in the context of teacher education and found that teachers who engaged in transformative learning activities developed greater self-awareness and critical thinking skills. Additionally, explored the relationship between critical thinking and transformative learning, particularly the role of perspective-taking in fostering intellectual and personal growth (Southworth, 2022). Perspective-taking can initiate transformative learning, thereby enhancing critical thinking skills. These findings suggest that transformative learning can enhance teachers' ability to foster critical reflection and independent thinking among their students.

Transformative learning fundamentally reshapes teachers' teaching practices across several dimensions, including teaching methods, interactions with students, and curriculum design. This educational approach encourages a shift from traditional didactic teaching methods to more participatory, student-centered approaches. Teachers who engage in transformative learning tend to adopt methods that promote critical thinking, problem-solving, and reflective practice among students (Sommier et al., 2022; Southworth, 2022). This shift helps create a more dynamic and engaging learning environment where students play an active role in their own learning process. With transformative learning, the interaction between teachers and students becomes more dialogical and less authoritative (Grzegorzcyk, 2018). Teachers who embrace transformative principles focus on facilitating rather than directing learning. This change in role from a "sage on the stage" to a "guide on the side" fosters a more open and reciprocal relationship between teachers and students. In this environment, students feel more valued and empowered to express their thoughts and opinions, which can lead to deeper learning and personal growth (Darling-Hammond et al., 2017; Molla & Nolan, 2020). Incorporating transformative learning into curriculum design involves integrating issues that are relevant to students' lives and the larger world around them. The curriculum becomes more flexible, interdisciplinary, and oriented toward real-world application. Teachers might integrate topics such as social justice, environmental sustainability, and global issues, which encourage students to connect their learning to societal challenges and personal beliefs. This approach not only increase the relevance of education but also encourages students to become active and socially engaged citizens.

Despite its significant impact on teachers' professionalism and education quality, not all teachers are familiar with the principles of transformative learning. Many factors cause this unfamiliarity. Previous studies show some key reasons include lack of exposure in teacher education for preservice teachers, insufficient professional development for in-service teachers, prevalent traditional teaching practices, resource constraints, as well as cultural and institutional resistance (Djuwita & Benyamin, 2019; Sommier et al., 2022). The successful implementation of transformative learning requires meticulous planning, starting from creating a supporting learning environment, designing the curriculum and evaluation criteria, as well as resource allocation. Transformative learning requires a learning environment where students feel safe to express their thoughts and challenge their assumptions and have autonomy of their own learning (Kegan, 2018). Careful planning helps in establishing such an environment by incorporating practices that promote trust, openness, and respect for diverse perspectives. The curriculum in transformative learning must be designed to include activities and experiences that promote critical

thinking, reflection, and perspective transformation (Cottafava et al., 2019; Kim et al., 2018). This involves integrating real-world problems, case studies, and project-based learning into the curriculum. Careful planning is required to ensure that the curriculum challenges students' existing conceptual frameworks and encourages deep learning. Implementing transformative learning may require additional resources, such as time for reflection, materials for experiential learning, and support for professional development (Meyer & Leonardi, 2018; Odell et al., 2019). The effective allocation of these resources and sustained support for the transformative learning initiatives are ensured through planning.

Despite these advancements, much of the existing literature has focused on structured transformative learning programs within teacher education or isolated case studies. Limited attention has been given to understanding how familiar practicing teachers are with transformative learning principles and how this familiarity translates into teaching practices, especially in the context of integrating ESD. Furthermore, factors influencing the successful adoption of transformative learning, such as institutional constraints, resource availability, and professional development opportunities, remain underexplored. Given the significant role of transformative learning in supporting the implementation of Education for Sustainable Development (ESD) and enhancing the quality and professionalism of the teaching profession, this study addresses these gaps by examining teachers' awareness of transformative learning and its implications for their teaching practices. Unlike prior studies that focus predominantly on theoretical models or experimental programs, this research investigates the practical realities of transformative learning adoption among practicing teachers. By identifying barriers and opportunities, it aims to bridge the gap between transformative learning theory and its application in real-world educational settings. The findings offer valuable insights for designing professional development models that support the effective integration of transformative learning principles into teaching practices, aligning with the goals of Education for Sustainable Development (ESD).

2. METHOD

This study utilizes quantitative paradigm as its research approach. Descriptive exploration and correlational research method were applied to address the objectives namely: First, this research aims to describe and compare how familiar teachers with the principle of transformative learning based on several categories; Second, to examine the correlation of teachers' familiarity on transformative learning with their teaching practices. A total of 103 (female = 50; male = 53) secondary and high schools' teachers participated in this study. The sample was randomly selected. To collect the data, an online survey was administered with a total of 46 questions in form of structured questionnaire. These questions were related to teachers' entry behavior, perception on transformative learning, as well as the implementation of transformative learning in their teaching practices.

The research procedure began with designing a structured questionnaire, which was subsequently reviewed by experts in transformative learning and educational research. This step ensured the relevance, clarity, and validity of the questionnaire items. Following this, a pilot study was conducted with a small sample of teachers to evaluate the instrument's validity and reliability, with adjustments made based on the feedback received. The finalized questionnaire was then distributed online via a survey platform to facilitate ease of access and efficient data collection. Teachers completed the survey independently, ensuring both confidentiality and unbiased responses. Finally, the collected data were analyzed using both descriptive and inferential statistical methods to derive meaningful insights. To ensure the accuracy and relevance of the data collected, the design of the instrument was guided by the research objectives and the theoretical framework underpinning the study. Each aspect of the instrument was carefully aligned with the intended constructs, incorporating insights from prior research and expert recommendations. This process ensured that the instrument could effectively capture the nuances of the variables being investigated. Following this rigorous development, the general rubric of the data collection instrument is presented in Table 1.

Table 1. Pointers if Research Questionnaire

Aspect	Description	Type of Data	Data Source
Teacher entry behavior	Gender	Nominal	Survey
	Teaching experience	Ratio	Survey
	Age	Ratio	Survey
	Subject	Nominal	Survey
	Training related to transformative learning	Nominal	Survey

Aspect	Description	Type of Data	Data Source
Practical application of transformative learning	This section records teachers' practical applications of transformative learning in their teaching practices (10 questions)	Ordinal (Likert Scale 1 - 4)	Survey
Perception and attitude towards transformative learning	This section records teachers' attitudes and perceptions regarding Transformative Learning (10 questions)	Ordinal (Likert Scale 1 - 4)	Survey
Reflection and evaluation principle in learning	This section records the principles of reflection and evaluation in teaching that teachers have implemented so far (10 questions)	Ordinal (Likert Scale 1 - 4)	Survey

The researchers developed each item in the questionnaire through a synthesis of relevant literature on transformative learning (Christie et al., 2015; Mezirow, 2000, 2018; Odell et al., 2019). The synthesized instrument then underwent tests for validity and reliability. The validity test used was Pearson's Product-Moment Correlation, while the reliability test applied Cronbach's Alpha. The results are presented in Table 2 and Table 3.

Table 2. Validity Test of the Questionnaire

Aspect	R _{value}	R _{table}	Sig.	Status
Teacher's entry behavior	0.327	0.192	0.001	Valid
Practical application of transformative learning	0.478	0.192	0.001	Valid
Perception and attitude towards transformative learning	0.425	0.192	0.001	Valid
Reflection and evaluation principle in learning	0.489	0.192	0.001	Valid

Table 3. Reliability Test of the Questionnaire

Aspect	Cronbach's Alpha Value	Status
Teacher's entry behavior	0.673	Reliable
Practical application of transformative learning	0.825	Reliable
Perception and attitude towards transformative learning	0.817	Reliable
Reflection and evaluation principle in learning	0.756	Reliable

Based on the data presented in Table 2 and Table 3, it can be inferred that all the questionnaire items were valid and reliable for use in this study. To analyze the data, multiple statistical tests were utilized. Different statistical tests allow researchers for a more comprehensive examination of data from various angles (Franke et al., 2017). For instance, using both descriptive and inferential statistics can provide a full picture of the data's characteristics and relationships. Furthermore, applying multiple tests can help validate findings and ensure robustness. Descriptive statistics were used in this study to analyze distribution of frequency of teachers' familiarity with transformative learning. This statistical test helps in summarizing large amounts of data, making it easier to understand patterns briefly. Meanwhile, inferential statistics such as independent sample T-test and One Way ANOVA were utilized to compare teacher's level of familiarity within several categories such as gender, age, teaching experience, as well as related training they've ever joined. Another inferential statistics test used was Pearson Product Moment Coefficient Correlation (PMCC) to determine the strength and direction of the relationship between teacher's familiarity to transformative learning with their ability to implement it in their teaching practices. This comprehensive use of both descriptive and inferential statistics provides a solid framework for interpreting the complex dynamics in educational settings and contributes significantly to literature by offering insights into factors that enhance or hinder the effective adoption of transformative learning strategies.

3. RESULT AND DISCUSSION

Result

Before the data is further analyzed with particular type of statistical test, the normality test was carried out to determine the normality of data collected in this study. The result of data normality test is displayed in Table 4.

Table 4. Test of Data Normality

Aspect	Value
N	103
Std. Deviation	3.089
Sig.	0.201

Sig. value of the data as shown in Table 4 is equal to 0.201. Since Sig. > 0.05 the data is categorized as normal, hence, further parametric statistics can be applied for data analysis. The first test that been done was to determine the teacher's level of familiarity on Transformative Learning. Table 5 shows familiarity level of all participants on transformative learning.

Table 5. Teacher's Familiarity on Transformative Learning

Level of Familiarity	Frequency
Not Familiar	8
Somewhat Familiar	55
Familiar	35
Very Familiar	5
Total	103

Finding on Table 5 indicates that a substantial number of teachers are moderately or little familiar with transformative learning concepts. Based on the data, most teachers were grouped within not familiar (F = 8) to somewhat familiar (F = 55) categories. Even though quite number of teachers have classified themselves as familiar (F = 35) with transformative learning, but only small percentage of teachers have classified themselves as very familiar (F = 5) with transformative learning. A study done by (Resch, 2023) revealed similar findings that many teachers were not initially familiar with the principles of transformative learning, which emphasizes deep, reflective changes in perspective. Teachers' familiarity on transformative learning according to their gender and based on whether the teachers have ever joined training related to transformative learning or not is shown in Table 6.

Table 6. Teacher's Familiarity on Transformative Learning Based on Gender & Related Training

Level of Familiarity	Gender		Related Training	
	F	M	Ever Had	Never Had
Not Familiar	5	3	1	7
Somewhat Familiar	26	29	22	33
Familiar	17	18	23	12
Very Familiar	2	3	4	1
Total	103		103	

Differences test of teachers' familiarity with transformative learning within gender and related training group are shown in Table 7.

Table 7. Teacher's Different Familiarity Test Using Independent Sample T-Test

Parameters	Gender		Related Training	
	F	M	Never Had	Ever Had
Mean	2.736	2.758	2.525	2.984
Std. Deviation	0.623	0.648	0.614	0.568
Sig.	0.814		0.537	
Sig. (2-tailed)	0.858		0.000	

For each familiarity level within the male and female groups as shown in the Table 6, the data indicates that a significant number of male teachers report high familiarity with transformative learning. There is also a notable presence of male teachers with moderate familiarity, indicating a broad range of engagement levels within this group. Additionally, female teachers show a distribution where the majority report moderate familiarity with transformative learning. While there are female teachers with high familiarity, the overall trend indicates that female teachers, on average, might have slightly less familiarity

with transformative learning compared to their male counterparts. Meanwhile, for each familiarity level among teachers who have and have not participated in a training about transformative learning a significant number of teachers who have undergone training report high familiarity with transformative learning. On the other hand, most teachers who have not participated in training report low to moderate familiarity with transformative learning. According to data in [Table 7](#), the results of the independent t-test based on gender group imply that there is no significant gender difference in familiarity with transformative learning (Sig. (2-tailed) > 0,05). It means both male and female teachers exhibit comparable levels of familiarity, suggesting that gender does not play a substantial role in influencing teachers' understanding and engagement with transformative learning principles. Additionally, with the Sig.(2-tailed) values on related training less than 0,05 indicates a significant difference in familiarity with transformative learning between teachers who have participated in training and those who have not.

Teachers' familiarity on transformative learning according to their teaching experience and age group are shown in the [Table 8](#).

Table 8. Teacher's Familiarity on Transformative Learning Based on Teaching Experience & Age Group

Level of Familiarity	Teaching Experience (in year)					Age Group (in year)				
	0 - 5	6 - 10	11 - 15	16 - 20	> 20	21 - 30	31 - 40	41 - 50	51 - 60	
Not Familiar	1	1	1	3	2	1	2	3	2	
Somewhat Familiar	17	9	4	17	8	12	17	15	11	
Familiar	4	13	7	8	3	6	20	7	2	
Very Familiar	0	1	1	1	2	1	1	2	1	
Total	103					103				

Differences test of teachers' familiarity with transformative learning within teaching experience and age group are shown in [Table 9](#).

Table 9. Teacher's Different Familiarity Test Using One Way ANOVA

Parameters	Teaching Experience (In Years)					Age Group (in years)				
	0 - 5	06 - 10	11 - 15	16 - 20	> 20	21 - 30	31 - 40	41 - 50	51 - 60	
Mean	2.518	2.933	2.954	2.662	2.773	2.760	2.825	2.704	2.613	
Std. Deviation	0.47673	0.60625	0.67899	0.65269	0.72847	0.517	0.634	0.673	0.717	
Homogeneity	0.802					0.663				
Sig. Between Groups	0.14					0.697				

Data shown in [Table 8](#) Indicates that teachers' understanding and engagement with transformative learning vary across their professional timelines and age group. Starting with their professional timelines. First, the majority of teachers in the group of 0 – 5 years of experience are either unfamiliar or only slightly familiar with Transformative Learning. Second, teachers with 6 – 10 years of experience show an increase in familiarity, with more teachers reporting moderate familiarity with transformative learning. Third, teachers with 11 – 15 years of experience report the highest levels of familiarity with transformative learning. This finding aligns with a study done by Avsec & Ferik (2021). Fourth, there is a slight decline in the familiarity levels within the group of teachers with 16 – 20 years of teaching experience. Last group (> 20 years of experience) the familiarity levels are more varied, with some teachers maintaining a high familiarity while others do not. This variation could be due to the diverse career trajectories and professional development experiences that long-serving teachers have encountered.

Moreover, the data in [Table 8](#) also reveals the distribution of familiarity levels within four distinct age groups: 20-30 years, 31-40 years, 41-50 years, and over 50 years. Teachers between the age of 21 – 31 years old report low to moderate familiarity with transformative learning. Next, teachers between the age of 31 – 40 years show an increased familiarity with transformative learning, with a significant number of teachers reporting moderate to high familiarity. Meanwhile teachers between the age of 41 – 50 years old exhibit the highest familiarity with transformative learning. Finally, the familiarity levels are more varied for teachers with the age over 50 years. While there are teachers with high familiarity, there is also a noticeable proportion with moderate familiarity. This variation might reflect diverse career trajectories and differing levels of ongoing engagement with new pedagogical developments among older teachers.

The Sig. value (p-value) for the ANOVA test for two groups being displayed in [Table 9](#) show value greater than the common significance level of 0.05 (0.14 and 0.697 respectively). This indicates that the differences in familiarity with transformative learning across the different teaching experience groups and different age groups are not statistically significant. These findings imply that teaching experience and age do not have a substantial impact on familiarity with transformative learning.

The implication of teachers' familiarity with transformative learning to their teaching practices is shown in [Table 10](#).

Table 10. Correlation of Teacher Familiarity with Transformative Learning to Transformative Teaching Practices

	Parameters	Familiarity	Implementation
Familiarity	Pearson Correlation	1	0.620
	Sig. (2-tailed)		0.000
	N	103	103

Pearson correlation coefficient (r) resulted in this study indicates strong correlation ($r = 0.620$) between teachers' familiarity with transformative learning and the implementation of transformative teaching practices. This finding suggests that as teachers' familiarity with transformative learning increases, their implementation of transformative teaching practices also tends to increase. Furthermore, the Sig.(2-tailed) values resulted in this study is < 0.005 indicating there's significant correlation between these two variables.

Discussion

The findings from this study indicate that a substantial number of teachers have moderate or limited familiarity with transformative learning concepts. Only a small percentage report being "very familiar" with these concepts. This gap in familiarity emphasizes the critical need for comprehensive professional development programs that focus on transformative learning. This finding aligns with previous research which urged that effective professional development is key to equipping teachers with the necessary skills and knowledge to implement innovative teaching practices ([Geller et al., 2023](#); [Kasl & Yorks, 2016](#)). Professional development programs that are continuous, collaborative, and closely tied to classroom practice are particularly effective in fostering deep understanding and application of transformative learning principles ([Desimone & Garet, 2015](#)). Similarly, professional development initiatives emphasizing active engagement, reflective practice, and problem-solving enhance teachers' ability to implement transformative learning approaches effectively ([Garet et al., 2001](#)). The limited familiarity with transformative learning among many teachers may also reflect inadequacies in initial teacher training programs which often focusing more on basic teaching skills instead of advanced pedagogical approaches such as transformative learning ([Bradd et al., 2017](#)). Integrating transformative learning principles into initial teacher training can provide teachers with a stronger foundation and readiness to adopt these strategies early in their careers.

Moreover, the findings suggest that exposure to transformative learning concepts alone is insufficient for ensuring their effective implementation. Transformative learning involves a major change in perspective, requiring teachers to engage in reflective practice and critical thinking ([Mezirow, 2018](#)). Professional development initiatives should therefore not only introduce the theoretical aspects of transformative learning but also provide opportunities for teachers to engage in reflective practice and apply these concepts in their classrooms. For instance, professional development models incorporating active learning experiences, peer collaboration, and coaching significantly improved teachers' application of transformative learning principles ([Lindvall et al., 2018](#)). The small percentage of teachers who report being "very familiar" with transformative learning highlights the need for targeted support and resources to help teachers advance from basic familiarity to deep understanding and effective practice. This progression can be facilitated through mentoring, peer collaboration, and continuous professional learning communities, which have been shown to be effective in supporting teachers' professional growth ([Darling-Hammond et al., 2017](#)). In addition, the broader educational environment plays a crucial role in supporting transformative learning. School leaders and policymakers should create supportive environments that encourage innovation and provide the necessary resources for professional development. A culture that values continuous improvement and reflective practice is essential for the successful implementation of transformative learning ([Araiza-Alba et al., 2021](#); [Campbell et al., 2019](#)).

Even though male teachers exhibited better familiarity to transformative learning, finding on gender issue for familiarity with transformative learning as shown in [Table 7](#) suggests that gender does not substantially influence teachers' understanding and engagement with transformative learning

principles. Both male and female teachers exhibit comparable levels of familiarity, indicating that transformative learning principles are equally applicable to educators regardless of gender. This aligns with the findings of previous research, who argue that gender differences in pedagogical approaches are often more influenced by contextual factors than inherent differences between genders (Naidoo & Wagner, 2020). The variety of engagement levels among male teachers to transformative learning could be attributed to several factors. One possibility is that male teachers may have more access to or prioritize professional development opportunities that focus on transformative learning. This could be influenced by institutional policies, individual motivation, or cultural factors within the educational environment. For instance, the role of supportive professional development environments in fostering teacher engagement with transformative pedagogies (Bilican et al., 2021). Schools that encourage and provide resources for innovative teaching methods might see higher familiarity levels among teachers who actively seek out these opportunities (Christie et al., 2015). Additionally, male teachers often engage more actively in professional development opportunities related to innovative teaching methods, which could explain their higher familiarity with transformative learning (Day & Gu, 2013; Karlberg-Granlund & Pastuhov, 2024). Lastly, male teachers are more likely to participate in professional learning communities that emphasize transformational teaching strategies, thus increasing their exposure and engagement with these practices (Collie & Martin, 2023).

For female teachers, the observed pattern of moderate familiarity with transformative learning highlights significant concerns regarding the accessibility and inclusiveness of professional development programs. Gender biases and structural barriers can impact female teachers' participation in professional development (Opfer & Pedder, 2011; Ruales et al., 2021). These barriers might include time constraints, lack of institutional support, or competing responsibilities, which can limit their opportunities to engage deeply with transformative learning practices (Eagly et al., 2020). Moreover, the data indicates that while some female teachers report high familiarity with transformative learning, this is not as prevalent as among their male counterparts. This discrepancy may highlight the need for more targeted and inclusive professional development initiatives that address the specific challenges and needs of female teachers. Previous study recommends to designing professional development programs that are flexible, context-specific, and supportive of all teachers, regardless of gender (Meyer & Leonardi, 2018). Similarly, continuous, gender-sensitive professional development can bridge the gap in familiarity and ensure equitable opportunities for all teachers to develop transformative teaching skills (Whitworth & Chiu, 2015). Such initiatives could help bridge the gap in familiarity and ensure that all teachers have the opportunity to develop and implement transformative pedagogical practices effectively.

Significant difference in familiarity with transformative learning between teachers who have participated in related training and those who have not as presented in Table 7 emphasizes the critical role that targeted professional development plays in enhancing teachers' understanding and engagement with transformative learning principles. Teachers who have participated in transformative learning training programs are likely better equipped to implement these practices in their classrooms. This aligns with the findings who emphasize the transformative potential of well-designed professional development programs (Sims & Fletcher-Wood, 2021). Such programs not only impart theoretical knowledge but also provide practical strategies and reflective opportunities, which are essential for fostering deep understanding and effective application of transformative learning principles. On the contrary, the majority of teachers who have not participated in such training report low to moderate familiarity with transformative learning. This suggests that without targeted professional development, teachers may have limited exposure to or understanding of transformative pedagogical approaches. This finding is consistent with the work of (Mate et al., 2019), who highlight the challenges teachers face in adopting innovative teaching methods without adequate professional development support. The sharp contrast in familiarity levels between trained and untrained teachers highlights the necessity of extensive and accessible professional development programs. Effective professional development should be continuous and closely integrated with teachers' instructional methods. Such programs can significantly enhance teachers' pedagogical skills and their ability to foster transformative learning environments (Liu & Ball, 2019). Moreover, the impact of professional development on teachers' familiarity with transformative learning is supported by the work of (Whitworth & Chiu, 2015), who found that continuous and intensive professional development leads to significant changes in teachers' knowledge and practices. This is particularly important for transformative learning, which requires teachers to shift their traditional pedagogical paradigms and adopt more reflective and student-centered approaches.

In practice, teachers who are skillful in transformative learning principles can create more engaging and meaningful learning experiences for their students. This is crucial for fostering critical thinking, self-reflection, and the ability to challenge existing assumptions, key components of transformative learning. Therefore, schools and educational institutions should prioritize professional

development programs that focus on these areas. To address the gap in familiarity with transformative learning among untrained teachers, it is essential to implement professional development programs that are not only accessible but also relevant to the specific needs of teachers. This includes providing opportunities for collaborative learning, peer mentoring, and reflective practice. Collaborative professional development can enhance teachers' sense of agency and their ability to integrate new pedagogical practices effectively (Ekamilasari & Pursitasari, 2021).

Research findings displayed in Table 8 suggests that teaching experience does not have a substantial impact on familiarity with transformative learning principles. These results challenge the assumption that increased teaching experience naturally leads to a greater familiarity with transformative pedagogical practices. While it might be expected that more experienced teachers would have higher levels of familiarity due to prolonged exposure to professional development and classroom practice, this study's findings indicate otherwise. The finding for early-career group (0-5 years of experience) teacher suggests that initial teacher training and early professional development phases may not adequately emphasize transformative pedagogical concepts. Recent literature supports this observation, indicating that teacher education programs often prioritize foundational teaching skills and classroom management over innovative and transformative teaching strategies (Avsec & Ferik Savec, 2021). As a result, early-career teachers may enter the profession with limited exposure to transformative learning principles, emphasizing the need for integrating these concepts into initial teacher training programs. Teachers with 6-10 years of experience show an increase in familiarity with transformative learning, with more teachers reporting moderate familiarity. This shift can be attributed to increased opportunities for professional development and practical classroom experiences that occur as teachers progress beyond their initial years of teaching. Ongoing professional development is crucial for teachers to refine their practices and adopt new pedagogical approaches (Sancar et al., 2021). As teachers gain experience and confidence, they are more likely to engage in professional development activities that introduce and reinforce transformative learning strategies.

The ANOVA test results (Table 9) for age groups indicate that there is no statistically significant difference in familiarity with transformative learning across different age groups. This finding suggests that teachers' age does not substantially impact their familiarity with transformative learning principles. The highest levels of familiarity with transformative learning are reported by teachers with 11-15 years of experience and age group of 41-50 years old. This trend may reflect a critical period in a teacher's career when they actively seek out advanced professional development opportunities and are more willing to integrate innovative pedagogical practices into their teaching. This trend aligns with findings who suggest that mid-career teachers often reach a stage where they are more receptive to advanced professional development and reflective teaching methods (Booth et al., 2021). At this stage, teachers have typically mastered classroom management and basic instructional techniques, enabling them to explore more sophisticated pedagogical strategies. Decreasing familiarity among teachers with 16-20 years of experience to transformative learning might indicate that mid-career teachers could face challenges such as professional burnout or diminished access to ongoing professional development. Teacher burnout is a significant issue that can impact mid-career educators, potentially reducing their engagement with new pedagogical initiatives (Skaalvik & Skaalvik, 2017). Similar to this, early-career teachers may lack the comprehensive understanding and practical experience needed to effectively implement transformative learning in their classrooms. Hence, younger teachers (age 21 – 30 years old) who are likely newer to the profession, may have had limited exposure to or experience with transformative pedagogical approaches. Additionally, professional development opportunities may be less targeted for these groups, leading to a stagnation in their familiarity with transformative learning. Variation of familiarity on teachers with more than 20 years of experience and age group of over 50 years could be due to the diverse career trajectories and professional development experiences that long-serving teachers have encountered. Veteran teachers often have diverse professional experiences that influence their engagement with new teaching practices (Day & Gu, 2013). Some may continue to seek out innovative professional development opportunities, while others may rely on established methods that have proven successful over their careers.

The strong positive correlation underscores the importance of familiarity with transformative learning principles in effectively implementing transformative teaching practices. Teachers who have a strong grasp of transformative learning principles are more likely to involve students in activities that promote critical thinking, problem-solving, and reflection, all of which are essential elements of transformative education (Odell et al., 2019). Teachers who thoroughly understand transformative learning principles are equipped with a solid theoretical foundation that guides their instructional methods (Liu & Ball, 2019; Sims & Fletcher-Wood, 2021). This foundation includes the importance of fostering critical reflection, engaging in open dialogue, and encouraging experiential learning. Such understanding helps teachers create learning environments that challenge students to question their

assumptions and engage deeply with content. For example, they might use case studies, debates, or problem-based learning scenarios that require students to think critically and articulate their reasoning. One of the key points to increase teachers' familiarity with transformative learning is professional development programs, for example training related to transformative learning. It can be seen from the result in Table 6 which illustrates that teachers who have undergone professional development in transformative learning are more likely to implement these practices. Hence, professional development programs are critical for enhancing teachers' knowledge and skills in transformative learning. Engagement in professional development related to transformative learning encourages teachers to adopt reflective practices. Reflective practice is essential for teachers to critically analyze their teaching methods, understand their students' needs better, and make necessary adjustments to improve learning outcomes (Colomer et al., 2020). This reflective approach fosters a deeper understanding of transformative learning principles and enhances teachers' ability to apply these principles in their classrooms.

4. CONCLUSION

The lack of teachers' familiarity to the principles and concepts of transformative learning as being reported in this study indicates some major issues, one of them is current teacher education curriculum focuses more on basic teaching and classroom management skills instead of more contemporary pedagogical approaches such as transformative learning. Besides that, teachers do need an ongoing professional development program during their professional career in order to be more transformative in teaching. Additionally, this level of familiarity is positively correlated with teachers' ability to implement transformative teaching in their teaching practices. The more familiar they are with transformative learning the more transformative the teachers in practicing their main responsibilities as a teacher. Hence, designing professional development programs to foster transformative teachers is essential for advancing ESD. Such programs should not only provide theoretical knowledge but also offer practical strategies for implementation. This includes creating opportunities for teachers to engage in reflective practice, collaborate with peers, and receive ongoing support from mentors. By fostering transformative teachers, professional development programs contribute to global efforts to address global sustainability challenges (e.g climate change) and ensuring that education systems worldwide are equipped to promote sustainability. Professional development programs should be designed to address the gaps identified through this study, particularly focusing on increasing familiarity with transformative learning among groups that are currently less familiar. Lastly, tailoring training programs to meet the specific needs of different teacher demographics can lead to more effective implementation of transformative teaching practices across the board.

5. ACKNOWLEDGE

The authors would like to thank Universitas Pendidikan Indonesia for generously providing the funding necessary for this research. Additionally, the authors affirm that there is no conflict of interest regarding the publication of this research article. The authors collectively uphold the integrity and transparency of the research process and its outcomes.

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