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From Attitude to Action: A Preliminary Study on Enhancing Educators' Competence for Inclusive Higher Education

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Abstract

Inclusive higher education requires educators who are not only willing to teach inclusively but who also have the skills to do so. This preliminary study offers a blueprint on how to examine the effectiveness of a three-day professional development program to strengthen the attitudes, self-efficacy, and inclusive didactics of educators. We propose a quasi-experimental design with pre-, post-, and follow-up measures, to measure the effect of the professional development program at three levels: attitudes (SACIE-R), self-efficacy (TEIP), and inclusive teaching practices (adapted Teaching Practices Questionnaire). The results, although preliminary, show a small but significant decrease in concerns toward inclusive education over time. Self-efficacy, on the other hand, showed a non-significant but consistent increase, especially at follow-up. In terms of teaching practices, significant improvements were observed in the teaching of basic skills, but not in dealing with diversity or differentiating for individual students. These preliminary findings seem to underline that short professional development programs, while contributing to increased confidence and certain didactic skills, are not sufficient to achieve lasting changes in attitudes and inclusive teaching strategies. This suggests that lasting impact likely requires structural follow-up, practical support, and strengthening the inclusive learning climate within higher education institutions.

Keywords: inclusive higher education; professional development; universal design for learning; teacher attitudes; self-efficacy

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1. Introduction

Inclusive higher education (HE) is crucial in providing equal educational opportunities for all students, regardless of their background or capabilities (Claiborne et al., 2011; Emmers et al., 2020; Gidden & Jones, 2021; Hills et al., 2022; Pulinx et al., 2021). Inclusivity in (higher) education refers to the creation of learning environments in which every student, regardless of background, gender, (dis)ability, or cultural difference, can fully participate and succeed. Inclusive education promotes student engagement and leads to better learning outcomes and increased student satisfaction (Booth et al., 2002).

Among the many educational models used worldwide, Universal Design for Learning (UDL) offers a proactive framework for creating inclusive learning environments that accommodate the diverse needs of all students (Cumming & Rose, 2022; Ferguson et al., 2019; Gidden & Jones, 2021; Hills et al., 2022). UDL is designed to minimize the need for individual accommodations by considering student variability from the outset and making

learning accessible to a broad and diverse range of learners, such as older students, first-generation students, international students, and those whose first language differs from the dominant language (McGuire & Scott, 2006; Wijeratne et al., 2022). It is built on three core principles: multiple modes of representation, multiple modes of action and expression, and multiple modes of engagement (CAST: About Universal Design for Learning, n.d.; Meyer et al., 2014).

UDL moves away from a reactive model that focuses on individual accommodations and shifts toward a more inclusive and anticipatory model (Arnold, 2021; Gidden & Jones, 2021) because it takes into account the different learning styles and needs of students. Recent research suggests that these principles may be extended by applying intersectionality to support marginalized groups, such as the LGBTQ+ community, and recognizing how overlapping identities shape students' educational experiences. As student populations continue to grow in complexity and diversity, UDL provides a flexible and comprehensive strategy for fostering equity and inclusion across various student populations (Hills et al., 2022).

Educators, the overall group of teaching staff in HE, play a central role in creating inclusive learning environments (Claeys-Kulik et al., 2019; Ferguson et al., 2019). They are responsible for instructing and supporting students in achieving their learning goals. To do their job effectively, educators must be aware of the diversity among students and the different needs involved (Dursun et al., 2021). However, it is a critical issue that how good educators are at their job in terms of teaching pedagogy is not always taken into account when choosing teaching staff in HE, as has been pointed out in the literature (Dursun et al., 2021; Ginsberg & Schulte, 2008). Selection often prioritizes research performance, seniority, or administrative experience over didactic expertise. Although pedagogy may receive consideration, it typically assumes a secondary role in the overall evaluation process (Chalmers, 2011).

This concern is underscored by findings from Saenen et al. (2024) revealing that educators frequently perceive a lack of validating policies and accountability measures. This lack of urgency emphasizes the discrepancy between the recognized importance of pedagogical skills and their prioritization in the hiring and evaluation processes. A large portion of educators are employed according to their specializations (content knowledge), industry knowledge, and proficiency in research, especially in universities but also increasingly in university colleges where practice-based research is growing. Therefore, according to Ginsberg and Schulte (2008), "many university educators emphasize content over pedagogy" (p. 85) and stress the agnostic nature of science and academic and societal standards, which can hinder the awareness of student diversity in their classroom.

To effectively promote inclusivity in HE, the UDL framework gives educators a solid base to create inclusive learning environments (Hills et al., 2022). Educators need not only knowledge of inclusive principles but also the skills to actually apply them in their teaching practice (Florian & Linklater, 2010). Professionalization programs play an essential role in this regard by helping educators develop inclusive attitudes, build self-confidence, and strengthen their pedagogical skills. UDL emphasizes a mindset that is crucial to the acquisition and effective use of pedagogical and teaching skills and thus goes beyond checklists for good teaching, which are often offered at courses such as the "basic qualification for teaching" (Gidden & Jones, 2021; Hills et al., 2022).

1.1. Attitudes Towards Inclusive Education

Educators' attitudes play a crucial role in promoting inclusive practices in HE. However, research suggests that these attitudes are not always supportive of inclusive education or the inclusion of students with diverse characteristics. While extensive research has explored attitudes towards inclusive education within compulsory education, there is a growing body

of research focusing on attitudes within HE (Bunbury, 2020; Lister et al., 2022; Martins et al., 2018). This emerging literature highlights that inclusive attitudes are influenced by a range of factors related to students, educators, and the institutional environment.

The perceived need for support significantly shapes educators' attitudes toward inclusion. According to Hassanein (2015), educators have less favorable attitudes towards the inclusion of students with disabilities when they perceive high levels of required support, suggesting that perceptions of resource adequacy and preparedness are critical determinants of inclusivity (Hassanein, 2015). Next to that, attitudes are widely recognized as a key predictor of educators' willingness to adopt inclusive practices—an issue that has been explored in various international contexts. For example, Emmers et al. (2020) examined the attitudes of 75 university educators and found that while their attitudes towards inclusive education were moderately positive, they stressed the need for more practical experience and visible role models to promote inclusivity in HE. Similarly, a large-scale study of 569 Chilean university educators reported predominantly positive attitudes toward inclusion (San Martin et al., 2021).

Several studies further substantiate the relationship between inclusive experience and attitudes. For example, Ayub et al. (2019) surveyed 180 university educators and found that those with previous experience of inclusive practices had more positive attitudes towards inclusion. Similarly, Avramidis et al. (2019) conducted a study with Greek teachers and found a strong correlation between positive attitudes and the use of inclusive teaching practices, such as peer tutoring. Cross-cultural comparisons further illustrate how experience shapes inclusive attitudes. In a comparative study between Japan and Finland, Yada et al. (2018) found that Japanese teachers had lower attitudes towards inclusion than their Finnish counterparts, largely attributed to differences in exposure to inclusive practices and professional development opportunities (Yada et al., 2018). This finding highlights the importance of sustained professional development and practical experience in shaping more positive attitudes towards inclusion.

1.2. Attitudes, Self-Efficacy, and Professional Development

Research has consistently demonstrated that educators who have received training and possess experience in teaching students with special educational needs are more likely to exhibit positive attitudes toward inclusion (Dupoux et al., 2006; Gonzalez et al., 2022; Mellom et al., 2018). Attitudinal change is a critical step in fostering inclusivity, as positive attitudes are closely linked to the adoption of inclusive teaching practices (Avramidis & Norwich, 2002). This relationship illustrates the value of professional development in preparing educators for inclusive practices, particularly when teaching diverse student populations (Consuegra & Cincinnato, 2020; Dursun et al., 2021; Wijeratne et al., 2022).

Empirical evidence highlights the impact of professional development programs (PDPs) on attitudes toward inclusion. For instance, Adesina et al. (2016) conducted a survey of 350 educators, revealing a strong correlation between positive attitudes toward inclusivity and participation in a targeted PDP (Adesina et al., 2016). Notably, attitude change was influenced by both prior experience and self-efficacy. Similarly, Song (2019), using TALIS data from 4000 teachers, found that PDPs focusing on practical skills and intercultural awareness had a significant positive effect on educators' attitudes toward inclusive education (Song, 2019).

Despite the potential for PDPs to influence attitudes, a critical barrier remains: many educators in HE report feeling inadequately prepared to teach diverse student populations, often due to low self-efficacy. Self-efficacy, defined as an individual's belief in their capability to execute specific tasks successfully, is a key predictor of inclusive teaching practices

(Bandura, 1997). It not only shapes educators' willingness to implement inclusive practices but also influences their long-term professional growth and resilience in inclusive settings.

Longitudinal and cross-sectional studies underscore the predictive role of self-efficacy in shaping attitudes toward inclusion. For instance, Savolainen et al. (2022) used a cross-lagged panel design with 1326 participants to show that self-efficacy is a strong predictor of attitudes toward inclusive education (Savolainen et al., 2022). Additionally, Alnahdi and Schwab (2021) found that attitudes were the strongest predictor of self-efficacy).

The link between self-efficacy and inclusive practices is well documented, with research indicating that educators who feel confident in their ability to support diverse learners are more likely to implement inclusive practices effectively (Sharma & Sokal, 2015). This relationship is further supported by meta-analyses and experimental studies evaluating the impact of PDPs on self-efficacy. Baysal and Mutlu (2021), who looked at 14 studies with a total of 969 participants, found that PDPs had a moderate effect size on self-efficacy (Cohen's d $\approx$ 0.5), with programs lasting more than 72 h having the most significant effect.

1.3. Professional Development on Inclusive Teaching Practices in HE

Successful implementation of inclusive practices in HE requires not only changes in educators' attitudes and self-efficacy but also concrete changes in their teaching practices. Despite increasing awareness of inclusivity, many educators report insufficient knowledge of inclusive teaching practices (Emmers et al., 2020; Lagacé-Leblanc, 2021; Martins et al., 2018). Therefore, it is imperative that educators acquire both the knowledge and the practical skills necessary to translate inclusive principles into inclusive classroom practices.

Inclusive teaching practices encompass a wide range of approaches aimed at supporting diverse learners. Examples include adapting teaching materials to meet diverse learning needs, integrating accessible educational technologies, and designing group activities that encourage the participation of all students (Loreman et al., 2014).

Empirical research highlights the role of practice-based PDPs in driving change in teaching practice. For example, Leifler (2020) conducted a pre- and post-test study of 26 educators and demonstrated that participation in a lesson study program resulted in an 88% increase in the use of inclusive teaching practices. In addition, participants reported a 50% increase in confidence in implementing these practices. The effectiveness of practice-based PDPs is further supported by systematic reviews. A meta-review of 38 studies by Kalinowski et al. (2019) showed that PDPs that used microteaching and video feedback were the best at making changes that would last in the way teachers teach. In particular, programs that lasted longer than six months produced the most significant and sustained improvements.

1.4. Problem Statement

Research indicates that many educators feel inadequately prepared to create an inclusive learning environment, which hinders the implementation of inclusive practices (Emmers et al., 2020; Lagacé-Leblanc, 2021; Martins et al., 2018). The literature identifies three interrelated challenges that affect the effectiveness of inclusive education. Firstly, educators' attitudes toward inclusivity have a significant impact on their behavior in the classroom. Positive attitudes are essential for the adoption of inclusive teaching practices (Avramidis & Norwich, 2002). There are various results regarding the attitudes of educators; some studies find average or slightly positive attitudes. Yet, most research suggests that numerous educators have rather negative attitudes toward inclusive education, especially when they identify a significant need for support among their students (Hassanein, 2015). Research suggests that attitudes are often correlated with previous experience of inclusive

practices and participation in professionalization programs (Emmers et al., 2020; Ayub et al., 2019; San Martin et al., 2021). Second, educator self-efficacy is crucial, as it reflects educators' confidence in their ability to provide inclusive education. Self-efficacy influences willingness to implement inclusive practices (Savolainen et al., 2022). Research suggests that many educators have low self-efficacy in teaching diverse student populations, which reduces their willingness to implement inclusive practices (Werner et al., 2021; Sharma & Sokal, 2015). Third, despite positive attitudes and self-efficacy, the implementation of inclusive teaching practices often falls short. Numerous educators have an inadequate understanding of effective inclusive teaching practices (Loreman et al., 2014). Strategies such as differentiated instruction, accessible technology, and inclusive group activities are critical for developing an inclusive learning environment (Emmers et al., 2020; Lagacé-Leblanc, 2021).

Addressing these challenges requires investment in targeted PDPs for teachers (Dursun et al., 2021). Effective PDPs focus on changing attitudes, developing self-efficacy, and focusing on practices. They increase positive perceptions of inclusive education by raising educators' awareness of personal biases and providing new insights into inclusivity (Florian & Spratt, 2013). Practical training in differentiated teaching techniques and creating inclusive learning environments can increase educators' confidence (Bandura, 1997; Baysal & Mutlu, 2021). It has been shown that PDPs that focus on practical techniques like microteaching, peer feedback, and lesson study can help educators make changes that last (Kalinowski et al., 2019; Malik et al., 2015; Leifler, 2020).

To address these three aspects (attitudes, self-efficacy, and inclusive practices) in an integrated manner, this pilot study designed and tested a three-day PDP aimed at creating inclusive learning environments according to the principles of UDL. This PDP consists of three interactive and reflective sessions aimed at improving attitudes, strengthening educators' sense of competence, and increasing the use of inclusive teaching practices. The expectation is that this approach will lead not only to more positive attitudes and increased confidence but also to concrete changes in classroom practice, creating a more inclusive and welcoming learning environment (Dursun et al., 2021; Martins et al., 2018; Mellom et al., 2018). As an exploratory intervention, the PDP was implemented on a small scale to examine its feasibility and perceived impact. The findings of this preliminary study will guide the development and refinement of a larger-scale research project targeted at systematically enhancing inclusive competency in HE settings.

Although research highlights the importance of attitudes, self-efficacy, and teaching skills in inclusive education, it remains unclear how effective PDPs are in promoting these three pillars in HE. Many studies focus on primary and secondary education, resulting in a knowledge gap regarding the effectiveness of PDPs in the context of HE. Thus, there is an urgent need for research that provides insight into how PDPs contribute to changing attitudes, enhancing self-efficacy, and improving inclusive teaching practices among educators. Therefore, this preliminary study evaluates the extent to which a three-day professional development program can improve educators' attitudes, boost their sense of self-efficacy, and modify their inclusive teaching practices in line with UDL principles in HE.

This study focuses on the following main question: "How effective are PDPs in promoting inclusivity in HE?"

To answer this main question, the following sub-questions are investigated:

- To what extent does participation in this PDP lead to changes in educators' attitudes toward inclusivity in HE?
- To what extent does participation in this PDP increase educators' self-efficacy in creating inclusive learning environments in HE?
- How and to what extent do educators report changes in their didactic practices for inclusive teaching after participating in this PDP?

2. Materials and Methods

2.1. Design

This study used a quasi-experimental pre-and-post design (Coe et al., 2021) to evaluate the impact of a PDP on educators' attitudes, self-efficacy, and teaching practices. The research took place within an internal educational professionalization initiative at a Flemish university and ran from January 2023 to December 2023. Ethical approval was obtained from the relevant ethics committee prior to the study. All procedures complied with the ethical guidelines relating to informed consent, data processing, and reporting.

2.2. Participants

The study included 25 educators from five different faculties. Of the participants, 22 identified as female and 3 as male. The participants represented a wide range of seniority and experience in HE teaching. Despite strong initial commitment, participant retention declined over the course of the study. In the pre-measurement phase, 24 out of 25 participants completed the survey (96%). In the post-measurement phase, the number of participants dropped to 16 (64%). Just 12 participants (48%), at the follow-up measurement, finished the survey. Finally, nine participants completed all three measures. A unique identifier system was used to link individual responses across the three phases, ensuring consistency and tracking of the participants' progress over time. Due to the voluntary nature of participation and the evolving responsibilities of academic staff throughout the year, recruitment and retention were particularly challenging. These factors are common in HE contexts and explain the limited sample size in this preliminary study.

Table 1 provides an overview of the demographic characteristics of the participants and their engagement with the PDP. The data show that a significant proportion of participants were aged between 35 and 44. In addition, a significant number of participants reported that they had no previous experience of Diversity, Equity, and Inclusion (DEI) training. While it is possible that the oldest participant also received the most training, this does not necessarily imply a one-to-one relationship between age and amount of training, and caution is therefore warranted in interpreting this. The observed decline in participation rates across the measurement phases highlights a common challenge in studies of professionalization initiatives in HE (Coe et al., 2021).

Table 1. Participants' characteristics.

Variables		Frequency	Frequency (%)
Gender	Man	1	11.1
	Woman	8	88.9
Age	25–34 years	2	22.2
	35–44 years	6	66.7
	45–54 years	1	11.1
DEI training	0 h of training	5	55.6
	Some training	2	22.2
	Considerable training (9–39 h)	1	11.1
	Much training	1	11.1

2.3. The Intervention

The PDP consisted of three half-day sessions spread over a three-month period. This structure was designed to allow educators sufficient time to apply and evaluate the principles learned in their teaching practice (Saenen et al., 2025). Each session focused on one of the three core principles of UDL.

The sessions were designed to foster participants' competencies in designing inclusive practices aligned with UDL. Intended learning outcomes included:

- Gaining insight into the link between high-quality education, diversity, and UDL;
- Recognizing and applying the care continuum (universal provision to reasonable accommodations);
- Critically reflecting on the limitations of the *average student* myth;
- Translating UDL principles into their own didactic practices that account for learner variability.

The sessions combined theoretical input (e.g., UDL neuroscience foundations), practical frameworks (e.g., CAST guidelines), and collaborative exercises (e.g., think–pair–share) to support educators in designing proactively accessible learning environments. The syllabus is available upon reasonable request.

The PDP has been carefully designed according to the six basic learning activities outlined in Laurillard's (2002) Conversational Framework. These six activities—instruction, researching, discussing, practicing, creating, and collaborating—were embedded throughout the program to promote active, experiential, and in-depth learning. Each session began with a detailed explanation of the UDL principle of focus, accompanied by interactive presentations and concrete examples of its application in HE contexts. Educators were encouraged to explore additional resources independently and analyze UDL applications within their disciplines (instruction and researching). Following the presentations, educators participated in peer discussions facilitated by the trainer. These discussions provided an opportunity to raise questions, share, and collaboratively explore the challenges and potential applications of UDL principles within their specific teaching contexts (discussing). Educators engaged in practical tasks designed to apply UDL concepts directly to their teaching practice. Activities included redesigning existing course materials to align with UDL principles and reviewing each other's teaching resources to exchange feedback and ideas (practicing and creating). Each session concluded with a structured reflection activity in which educators shared their key takeaways and insights from the session. This reflection period encouraged participants to critically evaluate their learning and identify strategies for integrating UDL principles into their teaching practice (collaborating).

The month-long interval between each session gave participants the opportunity to experiment with UDL strategies in their classrooms and to reflect on their experiences (Saenen et al., 2025). During this time, educators were encouraged to document their applications, successes, practices, and challenges, which were later discussed in the following session. This iterative process of learning, practicing, and reflecting was designed to support a deeper understanding and long-term integration of UDL principles into their teaching practice.

2.4. Instruments

Pre-, post-, and follow-up measurements were collected through an online survey using a quasi-experimental design. The survey employed three validated instruments to assess changes in attitudes, self-efficacy, and teaching practices: the Sentiments, Attitudes, and Concerns about Inclusive Education—Revised (SACIE-R) scale (Forlin et al., 2011), the Teacher Efficacy for Inclusive Practices (TEIP) scale (Sharma et al., 2012), and a modified version of the Teaching Practices Questionnaire (Lagacé-Leblanc, 2021), respectively. Measurements were conducted at three points: two weeks before the intervention, immediately after, and six months later. This approach was designed to assess not only the immediate outcomes of the PDP, but also its sustained impact over time (Coe et al., 2021).

To measure educators' attitudes toward inclusive education, the study utilized a revised version of the Sentiments, Attitudes, and Concerns about Inclusive Education—

Revised (SACIE-R) scale, originally developed by Forlin et al. (2011). In this study, a shortened version consisting of 13 items was used. Educators rated their responses on a four-point Likert scale, with options ranging from "strongly disagree" to "strongly agree." To ensure relevance to the HE context, minor adjustments were made to the terminology, consistent with the modifications implemented by Emmers et al. (2020) in a similar study. The fundamental structure and intent of the original SACIE-R scale were preserved.

Educators' self-efficacy in inclusive teaching settings was assessed using the Teacher Efficacy for Inclusive Practices (TEIP) scale, developed by Sharma et al. (2012). This self-report scale comprises 18 items, each designed to gauge different aspects of self-efficacy, such as managing diverse classrooms and adapting teaching methods for students with diverse needs. Responses were recorded on a six-point Likert scale, ranging from "strongly disagree" to "strongly agree." The TEIP scale was administered in its original format to maintain consistency with previous research and ensure comparability across studies.

To investigate the impact of the PDP on teaching practices, the study employed a modified version of the Teaching Practices Questionnaire, which was adapted from a large-scale Canadian study conducted by Lagacé-Leblanc et al. (2025). The original Canadian study used the Perceived Effectiveness of Teaching Practices measurement tool, which was created from qualitative research that had already been conducted, to look at inclusive teaching practices from the students' perspective. This questionnaire included 49 items covering a broad range of inclusive teaching strategies, such as validating students' understanding, repeating instructions, and using quizzes to review course content. In adapting the questionnaire for this study, the focus shifted from the students' perspective to the educators' self-reported practices. The total number of practices was adjusted to 47, with a specific emphasis on those most relevant to HE contexts. Educators were asked to rate the frequency with which they employed each teaching strategy on a five-point Likert scale, ranging from "never" to "always." This adaptation aimed to assess not only the variety of inclusive strategies used but also the extent to which the PDP influenced their application in practice.

2.5. Analysis

A total of nine complete datasets from participants in the intervention group were included in the analysis, covering attitudes, self-efficacy, and teaching practices. The data were imported into SPSS 24 and RStudio 2024.12.1, where they were pseudonymized and matched across the pre-, post-, and follow-up measurements. Given the small sample size and non-normal distribution of the data, non-parametric statistical tests were employed.

The repeated-measures design facilitated an examination of changes over time across the pre-, post-, and follow-up stages. To address the research questions, a Wilcoxon signed-rank test was used to determine whether scores differed statistically significantly between two measurement moments. This test is the non-parametric counterpart of the paired-sample *t*-tests. Descriptive statistics were reported to provide an overview of the trends observed at each measurement point. Statistical significance was determined using a threshold of $p < 0.05$ (Creswell, 2012). Due to the small sample size, marginally significant effects below $p < 0.1$ were also reported.

Scores on the subscales of the measurement instruments were constructed using mean scores. Their reliability was assessed using Cronbach's alpha. The SACIE-R scale, which measured attitudes, produced an overall alpha of 0.556 across the pre-, post-, and follow-up measurements (original $\alpha = 0.74$, as reported by Forlin et al., 2011). Although this value falls below the commonly accepted range for reliability (0.70 to 0.95), the low alpha was attributed to the small number of items in the scale and the limited sample size, in accordance with the explanation provided by Tavakol and Dennick (2011). In contrast, the

TEIP scale, which measured self-efficacy, demonstrated a high level of reliability, with a Cronbach's alpha of 0.88 (original $\alpha = 0.89$, as reported by Sharma et al., 2012).

To analyze teaching practices, a cluster analysis was conducted on the 47 items derived from the Canadian study (Lagacé-Leblanc et al., 2025). The scale was adapted to capture the educators' perspective and their reported frequency of use of inclusive practices. The clustering aimed to identify patterns in inclusive teaching behaviors, grouping similar practices into distinct categories. For a detailed account of the clustering process, see Emmers et al. (n.d.).

Several clusters emerged, each representing a key aspect of inclusive teaching practice. The first cluster captured the *basic professional attitude of an educator*, exemplified by items such as, "*I show interest in the students in my class or group.*" A second cluster focused on *basic knowledge transfer techniques*, with items such as, "*I use PowerPoint presentations to support my lessons.*" Additionally, practices related to *teaching a class* were grouped in a separate cluster, as represented by statements such as, "*I organize course content to ensure it is structured, clear, and intuitive.*" Another cluster addressed practices for *teaching different learners*, illustrated by items like, "*I use quizzes* via *Blackboard to review course material.*" Finally, the cluster reflecting *teaching every student based on UDL* included items such as, "*I am flexible with deadlines for assignments to accommodate student needs.*"

This clustering approach enabled a comprehensive examination of how the PDP influenced specific aspects of teaching practice, which revealed the breadth and consistency of inclusive strategies adopted by educators. Additionally, the use of repeated-measures ANOVA across these clusters facilitated an understanding of which areas demonstrated the most significant improvement following the intervention. By integrating (non)parametric testing with reliability assessment and cluster analysis, the study offered a detailed and multidimensional perspective on the effectiveness of the PDP.

The reliabilities of the clustered scales are depicted in Table 2. Out of the five scales, three demonstrate a satisfactory level of reliability that ensures a reliable outcome, while the remaining two exhibit notably lower scores. Consequently, this information is incorporated into the interpretation of the results.

Table 2. Reliability of the clustered scales.

Scale	Cronbach's Alpha	n of Items
Basic professional attitude	0.87	6
Basic transfer of knowledge	0.48	4
Teaching a class	0.81	11
Teaching different learners	0.79	13
Teaching each student	0.58	11

3. Results

This study should be interpreted as a preliminary study offering promising, albeit tentative, findings on short-term PDPs for inclusive HE. Its main contribution is providing a replicable model or blueprint for similar institutions (Donath et al., 2023). The results for the first and second research questions—"*How much did the intervention change educators' attitudes and self-efficacy toward inclusiveness and accessibility in HE?*"—are presented in Tables 3 and 4. The latter contains the results from the Wilcoxon signed-rank tests to determine the effects of time (pre-, post-, and follow-up measurements) on different factors of the SACIE-R and TEIP scales. The analysis revealed no significant changes between the pre- and post-measurements, nor between the post- and follow-up moments. Change was detected, however, between the pre- and follow-up moments for the "concerns" scale of the SACIE-R, indicating a statistically significant decrease from the pre-measurement (*Md*

= 3.00; M = 2.93, SD = 0.14) to the follow-up measurement (Md = 2.80, M = 2.69, SD = 0.39), with $p < 0.05$. The results suggest that concerns about inclusive education slightly declined six months later.

Table 3. Descriptive statistics for each measurement moment for SACIE-R and TEIP.

	Pre			Post			Follow-Up		
	Md	*M*	*SD*	*Md*	*M*	*SD*	*Md*	*M*	*SD*
Sentiments	3.20	3.33	0.46	3.60	3.49	0.35	3.40	3.38	0.41
Attitudes	3.00	2.92	0.13	3.00	2.83	0.28	3.00	3.06	0.21
Concerns	3.00	2.93	0.14	2.80	2.71	0.25	2.80	2.69	0.39
Overall SACIE-R	3.07	3.07	0.19	3.07	3.02	0.14	3.07	3.03	0.28
Instruction	4.38	4.33	0.46	4.38	4.39	0.37	4.62	4.60	0.41
Managing behavior	4.00	3.96	0.84	4.00	4.37	0.54	4.33	4.41	0.57
Collaboration	4.00	4.09	0.98	4.33	4.15	0.70	4.50	4.48	0.84
Overall TEIP	4.18	4.18	0.58	4.35	4.30	0.32	4.65	4.52	0.47

Note. *Md* = sample median; *M* = sample mean; *SD* = sample standard deviation.

Table 4. Changes between measurement moments for SACIE-R and TEIP.

	Pre vs. Post		Post vs. Follow Up		Pre vs. Follow Up		
	W	*p*	*W*	*p*	*W*	*p*	
Sentiments	10	0.4951	32	0.3088	16	0.8328	
Attitudes	11	0.4076	1	0.2012	0	0.1736	
Concerns	30	0.1221	15	0.9320	21	0.0350	*
Overall SACIE-R	28	0.5910	17	0.9435	10	0.5896	
Instruction	20	0.8122	13	0.2838	5	0.0677	†
Collaboration	17	0.8885	6	0.1073	12	0.4002	
Managing behavior	8	0.1807	13	0.9320	12	0.2274	
Overall TEIP	12	0.4412	9	0.1289	10	0.1383	

Note. n = 9 respondents; W = Wilcoxon signed rank test; * $p < 0.05$; † $p < 0.1$.

For the TEIP scores, which measured self-efficacy, no statistically significant differences were found across time. However, the results indicated a noteworthy pattern: all three subscales, as well as the overall score, showed positive growth over the three time points. For the "instruction" subscale, the growth between the pre-measurement (Md = 4.38, M = 4.33, SD = 0.46) and the follow-up measurement (Md = 4.62, M = 4.60, SD = 0.41) did reach marginally statistical significance ($p < 0.10$).

Table 5 contains the results for the third research question: "*To what extent did educators apply more inclusive teaching practices in their lessons after the intervention?*" It addresses changes in teaching practices based on the five clusters: basic professional attitude, basic transfer of knowledge, teaching a class, teaching different learners, and teaching each student based on UDL.

Wilcoxon signed-rank tests showed a statistically significant improvement (W = 2, $p < 0.05$) in educators' basic ability to transfer knowledge to learners after the intervention. Scores increased from the pre-measurement (Md = 3.50, M = 3.72, SD = 0.50) to the post-measurement (Md = 4.00, M = 4.00, SD = 0.39). This increase seems to suggest that the intervention effectively enhanced participants' ability to convey knowledge to their students.

A positive trend, although marginally statistically significant (W = 6, $p < 0.10$), was observed in the cluster of teaching a class from a homogeneous perspective. Scores rose from before the intervention (Md = 3.91, M = 3.92, SD = 0.44) to the post-intervention measurement (Md = 4.18, M = 4.16, SD = 0.36). This result suggests an improvement in

teaching practices aimed at structured, consistent knowledge transfer, albeit with marginal statistical support.

Table 5. Descriptive statistics and changes between measurement moments for the clustered teaching practices.

	Pre			Post					
	Md	***M***	***SD***	***Md***	***M***	***SD***	***W***	***p***	
Basic professional attitude	4.50	4.29	0.52	4.17	4.25	0.41	17	0.67	
Basic transfer of knowledge	3.50	3.72	0.50	4.00	4.00	0.39	2	0.04	*
Teaching a class	3.91	3.92	0.44	4.18	4.16	0.36	6	0.05	†
Teaching different learners	3.62	3.55	0.46	3.54	3.75	0.41	12	0.23	
Teaching each student	3.36	3.30	0.42	3.18	3.17	0.26	24	0.44	

Note. n = 9 respondents; *Md* = sample median; *M* = sample mean; *SD* = sample standard deviation; *W* = Wilcoxon signed rank test; * $p < 0.05$; † $p < 0.1$.

In contrast, the remaining three clusters showed no statistically significant changes over time. This suggests that the intervention did not effectively enhance educators' basic professional attitude (i.e., their general professional identity), their skills to teach different learners, or their skills to teach each student based on UDL practices.

4. Discussion

This preliminary study examined the impact of a PDP on educators' attitudes, self-efficacy, and inclusive teaching practices. The results of this study indicate that the PDP had mixed effects on educators' attitudes, self-efficacy, and teaching practices.

Concerns, as measured by a subscale of the SACIE-R, showed a significant decline from pre-intervention to follow-up. The decline in attitudes toward inclusiveness from pre-intervention to follow-up is a notable finding. This pattern, where initial gains regress over time, aligns with similar studies (e.g., Emmers et al., 2020; Florian & Spratt, 2013) that have observed a "novelty effect" immediately following professional development, followed by a decline as educators return to habitual practices. A possible hypothesis for this decline is that while the PDP effectively raised awareness, it did not provide sufficient long-term support or follow-up opportunities for educators to maintain and internalize inclusive attitudes. Additionally, the decline may indicate a cognitive dissonance effect: educators, once more aware of expected inclusive practices, may feel less confident about their current abilities, leading to a temporary drop in attitude scores (Bandura, 1997). Future PDPs should incorporate follow-up coaching or peer-learning groups to support sustained attitudinal change.

Although not statistically significant, self-efficacy, measured via the TEIP scale, demonstrated a positive trend over time for all subscales, as well as the overall scale. The "instruction" subscale even showed marginally significant results. This upward trend from pre- to post- to follow-up measurement is noteworthy. This aligns with findings from Sharma et al. (2012) and Savolainen et al. (2022), which suggest that self-efficacy often improves gradually as educators gain confidence through repeated practice. A possible explanation for the lack of statistical significance is the small sample size, which limited statistical power. Another hypothesis is that the PDP, while effective in providing knowledge, did not fully address the experiential component of building self-efficacy. Future iterations of the PDP should include more opportunities for experiential learning.

Additionally, teaching practices showed significant improvement in basic knowledge transfer strategies, with marginally significant gains in the factor "teaching a class." The significant improvement in knowledge transfer techniques seems to indicate that the program effectively equipped educators with foundational pedagogical skills. This is consistent with

findings from Kalinowski et al. (2019) and Malik et al. (2015), who emphasize the effectiveness of practice-oriented PDPs in improving core teaching practices. Additionally, the increase in strategies for teaching a class, though not statistically significant, underscores that the program effectively covered structured pedagogical techniques, which educators may find easier to implement.

Limitations and Future Research

We acknowledge a number of limitations. First and foremost, the small sample size limited the statistical power of the findings. We strongly recommend that future research include a representative sample of sufficient size. This is no small undertaking because of broader challenges inherent in studying the professionalization of HE. In particular, inconsistent participation in voluntary programs is often influenced by fluctuating academic workloads and shifting responsibilities over time. While small sample sizes are a common challenge in HE professional development studies, it is important to note that similar trends have been observed in larger-scale studies (e.g., San Martin et al., 2021; Donath et al., 2023).

A larger sample size will also enable the use of factor analysis to assess the latent constructs of the SACIE-R, TEIP, and Teaching Practices Questionnaire. In contrast to the mean score aggregation used in this study, confirmatory factor analysis is more capable of capturing the measurement error of the construct under investigation.

Second, the reliance on self-reported data may have introduced response bias. Future research should include classroom observations and student feedback to triangulate data and gain a more comprehensive understanding of teaching practices. Additionally, employing a longitudinal design with multiple follow-up points could provide valuable insights into the long-term sustainability of observed changes. Ideally, such research should incorporate an analysis of non-response and attrition rates to determine whether patterns of non-participation and dropout occur at random or reflect systematic bias.

Beyond the small sample size and self-reported data, other limitations emerged. The PDP's relatively short duration may have limited the depth of learning, and the lack of follow-up activities may have contributed to the decline in attitudes. To strengthen future PDPs, its duration could be extended to allow for deeper engagement and could be part of obligatory onboarding policies. Or it could be part of the yearly performance. The study exclusively examined educators, omitting the student perspective, which could offer valuable insight into inclusive practices.

Lastly, while this study provides insights into educators' self-reported changes in attitudes, self-efficacy, and practices following participation in the PDP, it captures only one perspective—that of motivated participants reflecting on their development. This preliminary study did not examine broader structural or institutional barriers to inclusive teaching, such as time constraints, lack of resources, or limited institutional support, which may significantly influence the extent to which inclusive practices can be implemented in daily teaching.

5. Conclusions

Promoting inclusiveness in HE requires PDPs that extend beyond knowledge transfer to foster sustainable changes in attitudes, self-efficacy, and teaching practices. This preliminary study highlights the strengths and limitations of a UDL-based PDP, demonstrating its effectiveness in reducing concerns about inclusive education, enhancing knowledge transfer, and strengthening self-efficacy but revealing gaps in the long-term sustainability of attitudinal change and the full integration of inclusive teaching strategies. To ensure lasting impact, future programs and research should incorporate ongoing support mechanisms, experiential learning opportunities, and multi-stakeholder engagement (such as

student voices). Advancing inclusiveness in HE is a continuous process requiring commitment to iterative improvement through research-driven, comprehensive professional development initiatives.

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Abbreviations

The following abbreviations are used in this manuscript:

HE	Higher education
UDL	Universal Design For Learning
LGBTQI+	Lesbian, homosexual, bi+, transgender, intersex, and queer
PDP	Professional development program
DEI	Diversity and inclusion
SACIE-R	Sentiments, Attitudes, and Concerns about Inclusive Education—Revised scale
TEIP	Teacher Efficacy for Inclusive Practices scale

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