Adaptations in Music Lessons: Inclusion of a Student with Autism Spectrum Disorder

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The present research explores teaching adaptations in music education for students with Autism Spectrum Disorder (ASD) in mainstream elementary schools. We examined how teaching experience and exposure to students with ASD impact the use of inclusive strategies and teachers' self-assessed competence by conducting a structured survey of music teachers in Slovenian elementary schools. Results show that adaptation practices differ depending on teaching experience, with experienced teachers more likely to implement structured routines, quiet spaces, and environmental modifications. There is a moderate correlation between the frequency of adaptations used by teachers and their ability to identify ASD characteristics. The findings highlight the importance of practical experience and targeted training in fostering teachers' confidence and competence, as well as the need for ongoing professional development to create inclusive and supportive learning environments in music education.

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1 Introduction

Music plays a vital role in human development, impacting emotional, social, creative, communicative, and cognitive functions. Educational studies emphasise the importance of fostering enjoyment and skill development in music education because it promotes not only musical growth but also intellectual, aesthetic, moral, and physical development (Denac 2002). Music allows children to express their emotions, develop empathy, and learn teamwork, all of which are important for their social identity and personal values (Angeli, 2020; Mendelson et al., 2016; Sicherl Kafol, 2015; Vaiouli et al., 2015; Zorba et al., 2020).

Music can serve as a unique medium for expression, connection, and personal growth for children with Autism Spectrum Disorder (ASD), who frequently face communication and social interaction challenges (Habe & Sicherl Kafol, 2020; Quinn, 2016; Tindell, 2010). Prior research indicates that engaging in musical activities such as singing, playing instruments, or rhythm games can improve self-confidence, social skills, and emotional intelligence in children with ASD (Siegel, 2023). Music's structured yet creative nature can be appealing to many children with ASD, providing predictability while also encouraging exploration. Group activities, such as ensemble performances or choral singing, promote collaboration, empathy, and social inclusion, bridging the gap between neurodiverse and neurotypical peers (Cardella, 2014; Cook et al., 2018; Hogle, 2021; Whitcomb, 2013; Zalar et al., 2015). Customised musical experiences can promote holistic development, fostering not only learning but also emotional well-being, inclusion, and a sense of belonging in the classroom and beyond (Gilboa & Ben-Shetrit, 2009; Katagiri, 2009; Rogelj & Štule, 2020). However, although some studies have noted that music has significant educational and therapeutic benefits, it must be carefully adapted to individual needs to avoid overstimulation or misuse as a form of self-stimulation (Scott, 2017).

While including students with ASD in mainstream classrooms and music instruction offers advantages, there may be drawbacks as well. Their presence frequently necessitates changes to teaching methods and classroom management strategies (Lingblom, 2017). Teachers must frequently incorporate structured routines, visual supports, and multisensory approaches, which can benefit both students with ASD and their neurotypical peers. Visual aids, for example, or clear, step-by-step instructions, may ensure that all learners comprehend and engage, fostering an

inclusive environment. In the classroom, students with ASD can also bring a greater awareness of individual differences. The class's overall approach to musical creativity and appreciation can be enhanced by their distinct musical engagement styles, such as a strong preference for patterns, rhythms, or repetition (Križnar, 2019).

1.1 Teaching adaptations

The inclusion of students with ASD in mainstream classrooms prompts teachers to foster a more flexible, inclusive, and compassionate learning environment (Obrul, 2016). While it may necessitate careful planning and adaptability, incorporating these students ultimately improves the educational experience for all. Music lessons, with their distinctive combination of structure and creativity, can be a successful instrument for promoting inclusion, personal growth, and mutual understanding among diverse learners (Denac, 2002).

Students with ASD may have difficulty with group dynamics, such as collaborating during ensemble performances or participating in unstructured activities like improvisation. These challenges may occasionally disrupt the flow of the lesson if not managed properly. Adjustments, such as using noise-cancelling headphones or designated quiet spaces, may be necessary for individuals with sensory sensitivities to loud sounds or sudden changes in the music environment (Deris & Carlo, 2013; Križnar, 2019).

Behavioural differences, such as difficulty taking turns or adjusting to transitions, may necessitate additional assistance from the teacher or classroom assistants. To create an inclusive and effective learning environment, teachers must balance the needs of students with ASD with those of the entire class (Šilc & Schmidt, 2022).

Despite these challenges, including students with ASD in music lessons provides significant benefits to all students. Exposure to neurodiverse peers increases empathy, patience, and collaboration, resulting in a more accepting and supportive classroom environment. Furthermore, adaptations made to assist students with ASD, such as clear communication, structured activities, and an emphasis on sensory regulation, can result in innovative teaching practices. These methods can enhance engagement and learning outcomes for the entire class, as they often cater to various learning styles and abilities (Križnar, 2019).

The research focusses on the implementation of adaptations in music education for students with ASD in mainstream elementary schools. It aims to address three key objectives:

- identify differences in teachers' use of adaptations: A comparison of the self-reported frequency of using adaptations in music classes between teachers who have prior experience teaching students with ASD and those who do not, both at the elementary (elementary teachers) and subject-specific levels (music professors);
- evaluate teachers' perceived competence in working with students with ASD: The research assesses teachers' perceptions of their preparedness and skills in teaching music to students with ASD;
- assess teachers' perception of their ability to recognise ASD characteristics: The research also investigates teachers' confidence in their ability to identify ASD characteristics in students.

The research aims to provide insights into the effectiveness of current practices as well as identify potential areas for improving teacher training and support for inclusive education.

2 Methods

The research was designed to gather comprehensive insights using descriptive and multivariate methods, which were carried out using structured survey questionnaires. The research sample consisted of all elementary school teachers who taught music lessons. To ensure a representative sample, teachers from all 456 general elementary schools in Slovenia, including branch schools, across all 12 statistical regions of the country, were invited to take part. The collected data were systematically processed and analysed with the SPSS software.

2.1 Data collection procedure and sample

Early in October 2024, the Slovenian Ministry of Education sent a survey questionnaire with 43 questions spread across 13 pages and 219 variables to 449 email addresses of Slovenian mainstream school secretariats. The survey was

available until December 2024 and took an average of 17 minutes and 55 seconds to complete (with a median time of 8 minutes and 52 seconds). After seven days of active survey availability, a follow-up request for teacher participation was sent to all principals of mainstream elementary schools that participated. In total, 879 emails were distributed personally, with 1,229 teachers taking part in the survey. Of these, 218 responses were fully completed and used in the analysis. Additionally, 46 teachers provided their email addresses, expressing an interest in learning about the research results or participating in the second phase of the research, which was qualitative in nature.

Table 1: Research sample.

		N	%
Highest completed musical education	No completed musical education	115	52,8%
	Elementary music education	62	28,4%
	Secondary music education (High school with final exam, until 2000)	2	0,9%
	Gymnasium (2000–2010) / Conservatory (2010 onwards) with final baccalaureate	6	2,8%
	Academy of Music	33	15,1%
Pedagogical education	Academy of Music (Music pedagogy)	25	11,5%
	Faculty of Education (Music pedagogy)	28	12,8%
	Faculty of Education (Elementary education)	152	69,7%
	Other	13	6,0%
Teaching experiences	Number of years teaching (M ± SD; min–max)	17,75 ± 11,170; 0–42	
Teaching grade	1st grade	71	32,6%
	2nd grade	55	25,2%
	3rd grade	47	21,6%
	4th grade	69	31,7%
	5th grade	59	27,1%
	6th grade	57	26,1%
	7th grade	57	26,1%
	8th grade	57	26,1%
	9th grade	57	26,1%
Experience teaching music to a student with ASD who is officially included in mainstream elementary school programme with additional professional support	None	91	41,7%
	Very few	40	18,3%
	Little	41	18,8%
	Neither a little nor a lot	29	13,3%
	Many	13	6,0%
	A lot	4	1,8%

While most teachers (69.7%) have finished their studies at an education faculty with a focus on teaching in elementary schools, many respondents (52.8%) lack formal music education. With an average teaching experience of 17.75 years and a standard deviation of 11.17 years, most respondents (32.6%) teach first grade. Furthermore, 58.3% of teachers have experience teaching students with ASD, while 41.7% do not.

2.3 Measurement instruments

The research employed a questionnaire to explore the use of teaching adaptations in music education for students with ASD.

The independent variables were divided into five categories: (1) musical education, (2) pedagogical education, (3) teacher work experience, (4) grade level, and (5) experience teaching music to students with ASD. The dependent variables focused on two key areas: (1) teaching adaptations and (2) ASD characteristics.

This approach allowed the researchers to examine the relationship between the teaching adaptations used and the specific needs of students with ASD in music education settings.

2.3.1 Teaching adaptations

Teaching adaptations included the use of motivators, token systems, visual supports, consistent routines and schedules, consideration of communication and interaction rules, availability of quiet spaces, consistent classroom organisation, providing time for reflection, organisational assistance, attention guidance, reducing sensory distractions, and changes to assessment and grading methods. The teaching adaptations used in this research were taken from ZUOPP-1 (2011) and the Ministry of Health Guidelines (2009).

2.3.2 ASD characteristics

ASD characteristics included social challenges (e.g., decreased social contact and difficulty sharing interests or emotions), communication impairments (e.g., poor verbal communication, mainstream eye contact, and difficulty understanding body language, gestures, or facial expressions), and behavioural challenges (e.g., difficulty

adapting behaviour to different situations, problems with imaginative tasks, difficulty forming friendships, and lack of interest in peers). Other characteristics examined included repetitive behaviours (e.g., repetitive movements, object sorting, throwing objects, echolalia, and idiosyncratic phrases), rigidity, and sensory sensitivities, such as insistence on routines, distress with changes, strong attachment to objects, restricted interests, hypersensitivity, hyposensitivity, and excessive reactions to specific sounds. The main characteristics of ASD were summarised using data from Hyman et al. (2020) and the American Psychiatric Association (2013).

2.4 Hypotheses

ASD is defined by difficulties in social communication and interaction, as well as restricted, repetitive behaviours and sensory sensitivities. These characteristics frequently necessitate teachers using tailored teaching strategies to create an inclusive and supportive learning environment. However, the extent to which teachers are prepared to recognise and address these needs, as well as how these adaptations are implemented in practice, remains an important area of research.

Given the diversity of teachers' qualifications, teaching experience, and exposure to students with ASD, it is critical to look into the factors that influence their ability to implement effective teaching adaptations. This research focusses on two types of teachers: elementary classroom teachers who teach music and music professors. It investigates their experiences, perceived preparedness, and actual use of adaptations when working with students with ASD. To address these objectives, the following hypotheses were formulated:

- (H1) Differences in the use of teaching adaptations: There are statistically significant differences in the use of teaching adaptations in music lessons in mainstream elementary education between teachers with prior experience teaching students with ASD and those without.
- (H2) Impact of teaching experience: Based on the length of time teachers have been teaching, there are statistically significant differences in the use of teaching adaptations in music lessons within mainstream elementary education.

- (H3) Perceived ability to recognise ASD characteristics: Most teachers perceive themselves as having limited ability to recognise ASD characteristics.
- (H4) Perceived competence to teach music to students with ASD: Most teachers perceive themselves as not adequately competent to teach music lessons when a student with ASD is in the classroom.
- (H5) Correlation between perception and adaptation usage: There are correlations between teachers' ability to recognise students with ASD and the perceived frequency of using teaching adaptations in music education within mainstream elementary education.

3 Results

The results of this research offer important insights into the use of various adaptations for students with ASD in mainstream elementary school and music lessons. By analysing teachers' responses, we examined how their experiences and perceived competence influence the implementation of specific strategies tailored to the needs of ASD students.

The results are presented in several key areas, such as differences in the use of different adaptations, the impact of teaching experience, teachers' ability to recognise ASD characteristics, their perceived competence to teach students with ASD, and the connection between these perceptions and the frequency of adaptation use. Together, these results aim to offer a comprehensive understanding of current practices and highlight areas for further improvement in fostering inclusive educational environments for students with ASD.

3.1 Differences in the use of teaching adaptations (H1)

Descriptive statistics were used to examine the teaching adaptations made by teachers with and without previous experience working with students with ASD. First, we looked at which teaching adaptations teachers were familiar with and how frequently they implemented them in both groups. By examining these differences, we hoped to identify patterns in the use of classroom adjustments and investigate how prior experience with students with ASD influences the perceived need and frequency of implementing specific strategies.

This table shows data on teachers' unfamiliarity with various teaching adaptations, comparing those with and without experience instructing students with ASD. The percentages represent the proportion of teachers who checked the box "I do not know (the adaptation)" on the questionnaire, indicating a lack of knowledge about these strategies.

Table 2: (Non)familiarity with teaching adaptations.

		Teachers with no experience in teaching students with ASD (N=91)		Teachers with experience in teaching students with ASD (N=127)	
		N	%	N	%
(1)	Use of motivators	50	54,94%	28	22,04%
(2)	Token reward system	59	64,83%	41	32,28%
(3)	Use of visual support	19	20,87%	6	4,72%
(4)	Always the same routine/scheduling of lessons (announcement of transitions, timetable changes)	6	6,59%	0	0%
(5)	Respecting the rules of communication and interaction (how to give instructions to the student - standing in front of/behind them, beside them, touching them, addressing them by name)	4	4,39%	0	0%
(6)	Quiet space	5	5,49%	3	2,36%
(7)	Always the same room/classroom organisation	2	2,19%	1	0,78%
(8)	Speed consideration/Time for reflection	2	2,19%	0	0%
(9)	Assistance with organising school supplies	3	3,29%	0	0%
(10)	Directing attention	1	1,09%	1	0,78%
(11)	Reduction of sensory distractions and other triggers of undesirable behaviour	7	7,69%	1	0,78%
(12)	Adaptation of assessment and homework	6	6,59%	2	1,57%
(13)	Use of Floortime elements	82	90,10%	100	78,74%
(14)	Use of PECS elements	86	94,50%	103	81,10%
(15)	Use of TEACCH elements	86	94,50%	99	77,95%
(16)	Use of Son-Rise® elements	87	95,60%	106	83,46%
(17)	Use of ABA elements	83	91,20%	102	80,31%
(18)	Use of TRP elements	81	89,01%	98	77,16%
(19)	Supporting positive behaviour	9	9,89%	4	3,14%
(20)	Suggestopedia	65	71,42%	61	48,03%
(21)	Adjustments to instructions (short, clear, specific, check for understanding)	3	3,29%	2	7,87%
(22)	Specific adaptation of the environment (e.g. seating arrangements)	1	1,09%	0	0%

Table 3: Use of teaching adaptations.

		Teachers with no experience in teaching students with ASD		Teachers with experience in teaching students with ASD	
		M	SD	M	SD
(1)	Use of motivators	3,20	0,782	3,09*	1,170
(2)	Token reward system	2,28*	1,143	2,20*	1,273
(3)	Use of visual support	3,83*	0,751	3,79	1,056
(4)	Always the same routine/scheduling of lessons (announcement of transitions, timetable changes)	3,44*	1,128	4,00*	1,168
(5)	Respecting the rules of communication and interaction (how to give instructions to the student - standing in front of/behind them, beside them, touching them, addressing them by name)	4,00*	0,778	4,09*	1,000
(6)	Quiet space	2,65*	1,156	3,35	1,308
(7)	Always the same room/classroom organisation	3,63*	1,049	3,94	1,115
(8)	Speed consideration/Time for reflection	4,22*	0,808	4,20*	1,018
(9)	Assistance with organising school supplies	3,74*	0,928	3,72	1,181
(10)	Directing attention	4,16*	0,686	4,03*	0,857
(11)	Reduction of sensory distractions and other triggers of undesirable behaviour	3,68*	0,838	3,62	1,123
(12)	Adaptation of assessment and homework	3,93	0,997	4,14*	1,200
(13)	Use of Floortime elements	2,56*	1,236	2,00*	1,240
(14)	Use of PECS elements	1,60*	0,894	1,83*	1,435
(15)	Use of TEACCH elements	1,80*	1,304	2,25*	1,481
(16)	Use of Son-Rise® elements	1,75*	0,957	1,62*	1,244
(17)	Use of ABA elements	2,13*	0,991	2,00*	1,414
(18)	Use of TRP elements	2,40*	1,174	2,14*	1,407
(19)	Supporting positive behaviour	4,55*	0,570	4,56*	0,691
(20)	Suggestopedia	3,42	1,027	3,32*	1,217
(21)	Adjustments to instructions (short, clear, specific, check for understanding)	4,45*	0,642	4,51*	0,848
(22)	Specific adaptation of the environment (e.g. seating arrangements)	4,21*	0,841	4,46*	0,949
Cronbach's Alpha		0,693		0,951	

* $p < 0.05$, distribution is not normal.

Results show a significant gap in familiarity with teaching adaptations for students with ASD, particularly among teachers with no prior experience. Teachers with no experience teaching students with ASD report significantly higher unfamiliarity with most adaptations than those with experience. Basic strategies such as motivators, token reward systems, visual support, and all of the specific interventions (Floortime, PECS, TEACCH, etc.) are mostly unknown to inexperienced teachers.

It is concerning that 20.87% of inexperienced teachers are completely unfamiliar with the use of visual support, which is one of the most basic tools for supporting students with ASD in educational settings.

Despite these differences, many advanced ASD-specific interventions (Floortime, PECS, TEACCH, etc.) are widely unknown, even among experienced teachers. These results suggest even those who have worked with students with ASD may lack comprehensive knowledge of specialised teaching methods. Notably, it is concerning that a significant proportion of teachers with experience working with students with ASD are still unfamiliar with important strategies such as the use of motivators, token reward systems, and instructional adjustments, all of which can significantly improve the effectiveness of teaching and support for students with ASD.

These findings highlight the importance of targeted training and professional development programs to increase teachers' familiarity with evidence-based ASD teaching adaptations. Furthermore, basic classroom structure strategies such as positive behaviour support and environmental adjustments should be emphasised in all teacher training curricula to promote more inclusive educational practices.

Cronbach's Alpha scores for both teacher groups show differences in their ability to rate various educational adjustments for children with ASD. For teachers with no experience teaching students with ASD, the Cronbach's Alpha value is 0.693 ($0.7 > \alpha \geq 0.6$), indicating questionable internal consistency. This means that, while their responses are somewhat similar, there is still significant variability. One possible explanation is that inexperienced teachers are less familiar with these adaptations, resulting in uncertainty or variation in their responses about their effectiveness and importance, implying that their responses are reliable but reflect a broader understanding of adaptations for students with ASD. Teachers with experience teaching students with ASD have a much higher Cronbach's Alpha of 0.951 ($\alpha \geq 0.9$), indicating very high internal consistency. This suggests that their responses to the different teaching adaptations were highly consistent and closely related, implying that they likely have a shared understanding of best practices for supporting students with ASD. A reliability value this high implies that their perspectives on the adaptations are well-aligned, likely due to their practical knowledge and direct experience using these strategies in the classroom.

Teachers who have no prior experience working with students with ASD are more likely to rely on adaptations such as motivators, token systems, visual supports, providing extra time for processing and reflection, assisting with school supply organisation, redirecting attention, reducing sensory distractions, and other triggers for unwanted behaviour. These approaches appear to be centred on providing general support and structured strategies to increase engagement and reduce behavioural challenges.

Teachers with experience teaching students with ASD, on the other hand, are more likely to make adaptations that reflect a more in-depth understanding of these students' specific needs. These include sticking to consistent routines and schedules, following communication and interaction principles, creating a designated quiet space for self-regulation, ensuring consistent classroom organisation, and adapting assessments and homework. They also frequently use strategies to encourage positive behaviour, such as tailoring instructions to be brief, clear, and specific while verifying understanding, and making specific environmental changes such as seating arrangements.

Table 4: Mann-Whitney U test to compare the differences in teaching adaptations between both groups of teachers (with and without experience teaching students with ASD).

	Group	N	Mean rank	p
Use of motivators	**Teachers with no experience**	41	70,32	0,971
	Teachers with experience	99	70,58	
	Total	140		
Token reward system	**Teachers with no experience**	32	61,97	0,616
	Teachers with experience	86	58,58	
	Total	118		
Use of visual support	**Teachers with no experience**	72	94,88	0,662
	Teachers with experience	121	98,26	
	Total	193		
Always the same routine/scheduling of lessons	**Teachers with no experience**	85	86,56	0,000*
	Teachers with experience	127	119,84	
	Total	212		
Respecting the rules of communication and interaction	**Teachers with no experience**	87	100,40	0,135
	Teachers with experience	127	112,36	
	Total	214		
Quiet space	**Teachers with no experience**	86	86,58	0,000*
	Teachers with experience	124	118,63	
	Total	210		
Always the same room/classroom organisation	**Teachers with no experience**	89	96,06	0,013*
	Teachers with experience	126	116,44	

	Group	N	Mean rank	p
	Total	215		
Speed Consideration/Time for reflection	**Teachers with no experience**	89	105,49	0,519
	Teachers with experience	127	110,61	
	Total	216		
Assistance with organising school supplies	**Teachers with no experience**	88	106,51	0,761
	Teachers with experience	127	109,03	
	Total	215		
Directing attention	**Teachers with no experience**	90	111,98	0,450
	Teachers with experience	126	106,02	
	Total	216		
Reduction of sensory distractions and other triggers of undesirable behaviour	**Teachers with no experience**	84	102,61	0,852
	Teachers with experience	122	104,11	
	Total	206		
Adaptation of assessment and homework	**Teachers with no experience**	85	94,74	0,024*
	Teachers with experience	125	112,82	
	Total	210		
Use of Floortime elements	**Teachers with no experience**	9	22,17	0,202
	Teachers with experience	27	17,28	
	Total	36		
Use of PECS elements	**Teachers with no experience**	5	15,20	0,946
	Teachers with experience	24	14,96	
	Total	29		
Use of TEACCH elements	**Teachers with no experience**	5	14,90	0,569
	Teachers with experience	28	17,38	
	Total	33		
Use of Son-Rise® elements	**Teachers with no experience**	4	15,00	0,473
	Teachers with experience	21	12,62	
	Total	25		
Use of ABA elements	**Teachers with no experience**	8	18,56	0,564
	Teachers with experience	25	16,50	
	Total	33		
Use of TRP elements	**Teachers with no experience**	10	22,35	0,422
	Teachers with experience	29	19,19	
	Total	39		
Supporting positive behaviour	**Teachers with no experience**	82	100,10	0,502
	Teachers with experience	123	104,93	
	Total	205		
Suggestopedia	**Teachers with no experience**	26	47,08	0,892
	Teachers with experience	66	46,27	
	Total	92		
Adjustments to instructions (short, clear, specific, check for understanding)	**Teachers with no experience**	88	99,69	0,092
	Teachers with experience	125	112,15	
	Total	213		
Specific adaptation of the environment (e.g. seating arrangements)	**Teachers with no experience**	90	94,42	0,001*
	Teachers with experience	127	119,33	
	Total	217		

* $p < 0.05$, statistically significant difference

The hypothesis (H1) suggests that teachers with experience in ASD make more effective and structured adaptations than those without experience ($p < 0.05$). This hypothesis is partially supported by the results, which show statistically significant differences in structured adaptations such as routine consistency, quiet spaces, classroom organisation, assessment and homework modifications, and environmental adaptation. Furthermore, experienced teachers exhibit greater consistency in their responses, indicating a more cohesive approach based on knowledge and practice. However, not all teaching adaptations differ significantly, implying that some strategies, such as the use of motivators and sensory reduction, are widely used by both groups.

The hypothesis is thus plausible, but not universally accepted. Although experience influences the use of structured and specialised adaptations, both groups use some general support strategies in similar ways. These findings emphasise the significance of training and hands-on experience in improving ASD-specific teaching practices to better support the unique needs of students with ASD and create a more structured and predictable learning environment.

3.2 Impact of teaching experience (H2)

Table 5: Kruskal-Wallis test for the adaptations applied in relation to the teaching experience (years of teaching).

	Years of teaching experience	N	Mean rank	p
Use of motivators	**5 years or less**	30	66,43	0,619
	6-12 years	23	63,63	
	13-20 years	20	78,38	
	21-30 years	47	69,94	
	31 years or more	20	77,95	
	Total	140		
Token reward system	**5 years or less**	23	61,13	0,545
	6-12 years	18	56,44	
	13-20 years	18	68,00	
	21-30 years	42	60,35	
	31 years or more	17	49,44	
	Total	118		
Use of visual support	**5 years or less**	37	99,35	0,329
	6-12 years	37	96,64	
	13-20 years	28	114,34	
	21-30 years	63	89,39	
	31 years or more	28	94,16	

	Years of teaching experience	N	Mean rank	p
	Total	193		
Always the same routine/scheduling of lessons	**5 years or less**	44	99,85	0,843
	6-12 years	40	104,01	
	13-20 years	32	115,31	
	21-30 years	68	107,96	
	31 years or more	28	106,88	
	Total	212		
Respecting the rules of communication and interaction	**5 years or less**	43	107,36	0,318
	6-12 years	41	103,89	
	13-20 years	33	122,14	
	21-30 years	69	98,76	
	31 years or more	28	117,29	
	Total	214		
Quiet space	**5 years or less**	40	106,38	0,150
	6-12 years	40	86,21	
	13-20 years	32	121,44	
	21-30 years	69	107,07	
	31 years or more	29	109,59	
	Total	210		
Always the same room/classroom organisation	**5 years or less**	43	111,70	0,825
	6-12 years	41	111,11	
	13-20 years	33	114,29	
	21-30 years	69	104,50	
	31 years or more	29	99,29	
	Total	215		
Speed Consideration/Time for reflection	**5 years or less**	44	104,10	0,239
	6-12 years	42	119,93	
	13-20 years	33	118,35	
	21-30 years	68	97,61	
	31 years or more	29	112,95	
	Total	216		
Assistance with organising school supplies	**5 years or less**	42	106,30	0,678
	6-12 years	42	105,81	
	13-20 years	33	112,94	
	21-30 years	69	102,46	
	31 years or more	29	121,19	
	Total	215		
Directing attention	**5 years or less**	44	109,39	0,959
	6-12 years	42	106,62	
	13-20 years	33	113,12	
	21-30 years	69	105,24	
	31 years or more	28	112,52	
	Total	216		
Reduction of sensory distractions and other triggers of undesirable behaviour	**5 years or less**	43	94,12	0,406
	6-12 years	40	104,49	
	13-20 years	32	114,75	
	21-30 years	65	98,85	
	31 years or more	26	115,29	

	Years of teaching experience	N	Mean rank	p
	Total	206		
Adaptation of assessment and homework	**5 years or less**	42	100,32	0,647
	6-12 years	41	113,44	
	13-20 years	33	112,80	
	21-30 years	66	99,42	
	31 years or more	28	107,38	
	Total	210		
Use of Floortime elements	**5 years or less**	7	15,36	0,009*
	6-12 years	6	10,33	
	13-20 years	5	30,60	
	21-30 years	11	17,00	
	31 years or more	7	22,36	
	Total	36		
Use of PECS elements	**5 years or less**	8	13,69	0,290
	6-12 years	6	11,92	
	13-20 years	1	28,00	
	21-30 years	8	16,06	
	31 years or more	6	16,25	
	Total	29		
Use of TEACCH elements	**5 years or less**	6	11,42	0,051
	6-12 years	7	12,57	
	13-20 years	2	30,00	
	21-30 years	10	18,45	
	31 years or more	8	20,00	
	Total	33		
Use of Son-Rise® elements	**5 years or less**	4	9,00	0,123
	6-12 years	6	10,75	
	13-20 years	1	24,50	
	21-30 years	7	13,14	
	31 years or more	7	15,43	
	Total	25		
Use of ABA elements	**5 years or less**	8	15,94	0,149
	6-12 years	6	11,25	
	13-20 years	2	28,75	
	21-30 years	10	19,00	
	31 years or more	7	16,93	
	Total	33		
Use of TRP elements	**5 years or less**	11	20,73	0,040*
	6-12 years	7	11,14	
	13-20 years	4	32,13	
	21-30 years	10	19,75	
	31 years or more	7	21,14	
	Total	39		
Supporting positive behaviour	**5 years or less**	42	98,82	0,739
	6-12 years	41	95,43	
	13-20 years	32	107,14	
	21-30 years	63	106,50	
	31 years or more	27	107,93	

	Years of teaching experience	N	Mean rank	p
	Total	205		
Suggestopedia	**5 years or less**	19	42,26	0,588
	6-12 years	13	45,88	
	13-20 years	15	56,00	
	21-30 years	26	44,12	
	31 years or more	19	46,92	
	Total	92		
Adjustments to instructions (short, clear, specific, check for understanding)	**5 years or less**	44	89,01	0,166
	6-12 years	42	110,74	
	13-20 years	33	110,47	
	21-30 years	67	111,52	
	31 years or more	27	115,04	
	Total	213		
Specific adaptation of the environment (e.g. seating arrangements)	**5 years or less**	44	98,39	0,459
	6-12 years	42	103,29	
	13-20 years	33	118,62	
	21-30 years	69	111,75	
	31 years or more	29	115,90	
	Total	217		

* $p < 0.05$, distribution is not normal.

The Kruskal-Wallis test was used to determine whether the implementation of teaching adaptations varies by teacher years of experience. We were hoping to identify patterns in how teaching practices evolve with professional expertise and evaluate the impact of experience on the implementation of inclusive strategies.

The Kruskal-Wallis test results indicate that there are no statistically significant differences in the majority of teaching adaptations according to the length of teachers' work experience. Most tested adaptations, including the use of visual aids, structured routines, quiet spaces, token reward systems, motivators, and different behavioural and instructional strategies, have p-values greater than 0.05, indicating that the differences in experience levels are not statistically significant. This implies that teachers, regardless of their years in the profession, tend to use these adaptations in a relatively similar manner.

Teachers with 5 years or less of experience typically use teaching adaptations at a moderate level, with no significant differences between groups in most categories. They use common strategies, such as motivators, token reward systems, structured routines, visual support, and communication rules, in the same way that more experienced teachers do. However, they are less likely to use specialised methods

such as Floortime, TEACCH, and TRP elements, implying that these approaches are not as commonly used in their practice. The lack of statistically significant differences in their adaptation use suggests that their teaching style is consistent with broader educational trends rather than heavily influenced by experience.

The findings for teachers with 6 to 12 years of experience show a similar pattern: they consistently use common adaptations, while their use of specialised methods is limited. Their mean ranks for strategies like visual support, structured routines, and promoting positive behaviour show effective implementation of well-established inclusive teaching techniques. Overall, their relatively low rankings in most variables indicate that they are in a transitional phase, refining their teaching approach but not actively pursuing advanced instructional strategies.

Teachers with 13 to 20 years of experience are more engaged with both general and specialised teaching adaptations, as evidenced by their average rankings across multiple categories. They make extensive use of structured strategies such as visual support, lesson planning, designated quiet areas, and assistance with organising school supplies, emphasising the importance of classroom stability and structure. Furthermore, their higher rankings in specialised methods, such as the use of Floortime, TRP, and TEACCH therapy elements, show that they are more willing to incorporate alternative teaching approaches. This group is the most likely to use both traditional and specific strategies, implying that teachers at this stage may have gained enough experience to confidently explore and apply different teaching methods.

For teachers with 21 to 30 years of experience, the findings demonstrate a consistent approach to teaching adaptations, with moderate rankings for both general and specialised strategies. Their use of structured routines, sensory reduction techniques, and instruction adjustments remains relatively stable when compared to other groups, indicating well-established teaching practices. While they exhibit moderate engagement with specialised adaptations such as Floortime and TRP, their rankings for these strategies are lower than those of the 13 to 20-year experience group. This suggests that, while they use specialised methods, they may rely on traditional, well-established teaching techniques rather than actively implementing new strategies. Their results suggest that they have established consistent teaching patterns that

effectively support inclusive learning, but they may prioritise stability over innovation.

Teachers with 31 years or more of experience show moderate-to-high engagement in most areas, with a slight preference for structured strategies. While they also show engagement with specialized methodologies, such as TRP, TEACCH, and ABA elements, their rankings remain lower than those of the 13 to 21-year group. This suggests that, while experienced teachers understand the importance of specialised approaches, they may not actively seek out or implement them as frequently as mid-career teachers.

As we can see in the results so far, there are a few notable cases in which statistically significant differences were found. The use of Floortime elements ($p = 0.009$) and TRP elements ($p = 0.040$) differed significantly based on teaching experience, indicating that these strategies are not implemented equally across career stages. Furthermore, the use of TEACCH elements is almost identical, with a near-significant p-value of 0.051, indicating a similar trend in their application based on work experience.

Given these results, the hypothesis is only partially supported. While experience appears to influence the implementation of specific adaptations, the majority of teaching strategies tested show no significant variation across experience levels. This suggests that other factors, such as initial teacher education, school policies, professional development opportunities, and personal teaching preferences, may have a greater impact on the use of most adaptations.

Overall, while experience may influence the application of some specialised methodologies, the data does not support a broad and consistent impact of teaching experience on the implementation of teaching adaptations in music lessons. Future research could investigate additional variables like training background, teacher attitudes, and institutional support to better understand what motivates the adoption of inclusive teaching strategies.

3.3 Perceived ability to recognise ASD characteristics (H3).

The ability of teachers to recognise and address the distinct characteristics of autism spectrum disorders is critical in fostering inclusive classrooms in mainstream elementary education settings. To ensure a focus on practical, experience-based perspectives, this part of the research only included teachers who had firsthand experience teaching students with ASD (N=127).

Table 6: Recognised ASD characteristics.

		M	SD
(1)	Reduced ability to make social contact.	3,65*	0,839
(2)	Reduced ability to share interests or feelings.	3,65*	0,791
(3)	Peculiarities in verbal communication (e.g. specific tone/intonation, overly formal speech, etc.).	3,42*	1,211
(4)	Eye contact irmainstreamities (absence or lack of).	3,50*	0,950
(5)	Deficits in understanding of body language, gestures.	3,25*	0,976
(6)	Deficit in understanding of social context, sarcasm, literal understanding.	3,75*	0,976
(7)	Deficiency of facial expressions or unusual facial expressions.	3,36*	0,981
(8)	Difficulty adapting to different situations, difficulty with transitions (new activity/space/person).	3,85*	0,836
(9)	Difficulty with imaginative play or tasks requiring imagination.	3,37*	1,022
(10)	Difficulties in forming friendships.	3,68*	0,999
(11)	Reduced interest in peers.	3,35*	1,138
(12)	Repetitive movements or tics.	2,99*	1,178
(13)	Sorting things.	2,83*	1,176
(14)	Throwing objects.	2,32*	1,126
(15)	Echolalia.	2,10*	1,174
(16)	Idiosyncratic speech/phrases.	2,17*	1,111
(17)	Insistence on routine/inflexibility.	3,36*	1,005
(18)	Distress at change (e.g. timetable, lesson, location).	3,36*	1,081
(19)	Strong attachment to objects.	3,07*	1,025
(20)	Limited interests.	3,17*	1,047
(21)	Hypersensitivity.	3,26*	0,978
(22)	Hyposensitivity.	2,70*	1,236
(23)	Excessive response to a particular sound.	3,17*	1,089
(24)	Delay in following and responding to instructions.	3,15*	1,047
(25)	Talking to self.	2,53*	1,030
(26)	A specific tone of voice that is specific only to the student.	2,87*	1,287
(27)	Student copies accents, voices and sounds well.	2,57*	1,138
(28)	Student does not greet and/or say hello/goodbye.	2,70*	1,191
(29)	Student laughs at the distress of others.	2,36*	1,232
(30)	Lack of desire to participate in group activities.	3,46*	1,029
(31)	Poor hand-eye coordination.	2,88*	1,021
(32)	Clumsiness.	3,06*	1,122

		M	SD
(33)	Student has no interest in writing down the notes/learning material.	3,27*	1,237
(34)	Strong sense of music (rhythm and/or melody and/or music making).	2,72*	1,206
(35)	Jumping in place, when a student is happy.	2,63*	1,246
(36)	Unusual, repetitive movement patterns (e.g. sudden hand movements, continuous hand movements, rotation, rocking, etc.).	2,81*	1,180
(37)	Walking on tiptoes.	1,93*	1,176
(38)	Creating unusual, often uncontrolled sounds.	2,72*	1,132
(39)	Mood swings.	3,37*	0,880
(40)	Student laughing/crying for no particular reason.	2,52*	1,181
(41)	Restlessness, constant need to move.	3,17*	1,092
(42)	Student interrupts the speech of others.	2,93*	1,190
(43)	Student needs constant supervision because of unpredictability.	2,97*	1,357
(44)	Student walks with head bowed.	2,45*	1,146
(45)	Student often wanders off into his own world in his mind.	3,48*	0,898
(46)	Expression of areas of strength or special interests.	3,31*	1,088
(47)	Unusual habits (thumb sucking, biting, playing with hair, etc.).	2,37*	1,302
Cronbach's Alpha		0,928	

* $p < 0.05$, distribution is not normal.

The high Cronbach's alpha indicates that the 47 ASD characteristics recognised by teachers are closely related and form a coherent scale. This means that teachers' responses to various characteristics are consistent, indicating the data's reliability. The mean (M) values across items show that teachers most frequently identify characteristics associated with social interaction difficulties (for example, difficulty adapting to different situations (8), deficits in understanding social context (6), and difficulties forming friendships (10). Lower mean values for certain behaviours (e.g., walking on tiptoes (37) or echolalia (15)) suggest that these characteristics are recognized less often or occur less frequently in mainstream classrooms. While these characteristics are less common, they still contribute to the broad range of behaviours associated with ASD.

These findings highlight the challenges students with ASD face in managing daily interactions and forming meaningful relationships in the classroom. They also offer a thorough understanding of how ASD presents in students, showcasing both evident and subtle traits that can impact their learning and social experiences.

Table 7: Wilcoxon test to assess the teacher's own perception of their ability to recognise the ASD characteristics in students.

	N	M ± SD	Observed Median	Hypothetical Median	p
Teachers with no experience of teaching students with ASD	91	2,5 ± 0,67	3	2	0,000*
Teachers with experience teaching students with ASD	127	3,2 ± 0,72	3	2	0,000*

* $p < 0.05$, statistically significant difference.

Teachers without prior experience working with students with ASD perceive themselves as partially equipped to identify ASD characteristics in their students, with a median self-assessment score of 2 ($Me = 2$, $p < 0.05$). This suggests an inadequate amount of confidence in their ability to identify the characteristics linked to ASD. Teachers with prior experience working with students with ASD, on the other hand, rate themselves as partially equipped but have a higher self-assessment of their competence when compared to teachers who have never taught students with ASD. Their median self-assessment score is 3 ($Me = 3$, $p < 0.05$), indicating that practical experience enhances their preparedness and ability to identify ASD characteristics.

These findings highlight the importance of direct experience in building teachers' confidence in identifying ASD characteristics. They suggest that those without experience may benefit from targeted training or additional professional development to improve their understanding and ability to recognise ASD characteristics. While the initial hypothesis proposed that most teachers believe they have a limited ability to recognise ASD traits, the data suggest a more nuanced reality. As a result, while the hypothesis is partially supported, it does not fully capture the impact of experience on perceived ability. A more precise conclusion would be that teachers without ASD experience feel less capable of identifying ASD characteristics, whereas those with experience feel moderately equipped, though not entirely confident.

3.4 Perceived competence to teach music to students with ASD (H4)

To effectively work with students with ASD, one must understand their specific needs, identify key characteristics, and employ effective teaching strategies. This approach combines theoretical knowledge, hands-on experience, and continuous

professional training to create inclusive and supportive learning environments that address the educational and social challenges that these students might encounter.

Table 8: Wilcoxon test to assess the teacher's own perception of their competence to teach music to students with ASD.

	N	M ± SD	Observed Median	Hypothetical Median	p
Teachers with no experience of teaching students with ASD	91	2,1 ± 0,68	2	2	0,093
Teachers with experience teaching students with ASD	127	3,0 ± 0,70	3	2	0,000*

* $p < 0.05$, statistically significant difference.

Teachers who have no prior experience working with students with ASD believe they are not adequately trained for this type of work ($Me = 2$, $p > 0.05$). This reflects a lack of opportunities to interact with and support students with ASD, which may have an impact on their confidence in effectively addressing these learners' specific needs. On the other hand, teachers who have taught students with ASD rate their competence higher and consider themselves to be partially trained to teach them ($Me = 3$, $p < 0.05$).

Thus, while the hypothesis is valid for inexperienced teachers, it is not universally applicable. This suggests that hands-on experience significantly improves their perceived readiness and skill set in dealing with the unique challenges of supporting students with ASD, highlighting the importance of practical training and direct involvement in developing teacher competence.

3.5 Correlation between perception and adaptation usage (H5)

We can gain a better understanding of how teachers' awareness and practical strategies align to support students with ASD by examining the relationship between their ability to recognise the characteristics of ASD and their use of a variety of adaptations.

Spearman's correlation coefficient ($r_s = 0.481$) shows a moderate positive correlation between teachers' perceived ability to recognise ASD characteristics and the frequency with which adaptations are implemented in music lessons.

Furthermore, the statistical significance of this correlation ($p < 0.01$) confirms that the observed relationship was highly unlikely to occur by chance.

Table 9: Spearman's correlation between teachers' perceptions of their own competence to recognise the characteristics of ASD and the use of adaptations.

		Perceived frequency of using music lesson adaptations in mainstream elementary education
Teacher´s perceptions of their own competence to recognise the characteristics of ASD	r_s	0,481*
	p	0,000
	N	127

* $p < 0.01$, correlation is significant at the 0.01 level.

The results strongly support the hypothesis that there is a link between teachers' perceived ability to recognise ASD characteristics and their frequency of including adaptations in music lessons. This suggests that teachers who are more adept at identifying ASD characteristics are more likely to notice or report making various adjustments to their teaching practices to better support the needs of students with ASD. However, while the correlation is moderate, it suggests that other factors may influence teachers' adaptation usage, which could be investigated in further research.

4 Discussion

The present research emphasises the relationship between teaching experience, adaptation implementation, and teachers' perceived competence in teaching students with ASD. There was a clear difference in how teachers with and without prior experience teaching students with ASD used teaching adaptations (H1). Teachers with more experience implemented tailored strategies more frequently than their less experienced colleagues, confirming that consistent work with ASD students increases the likelihood of adopting effective practices (Hourigan & Hammel, 2017).

Teaching experience also influenced adaptation choice (H2), with more experienced teachers favouring methods such as TEACCH and Floortime elements. However, implementation varied, particularly among mid-career teachers, indicating potential gaps in training or exposure to specific strategies at different stages of their careers. Providing targeted professional development could enhance the consistency and effectiveness of inclusive practices, as previously examined by Šilc & Schmidt (2022).

While many teachers perceived themselves as partially competent in recognising ASD characteristics (H3), the present research discovered that the ability to identify specific ASD traits was strongly related to the frequency of adaptation use (H5). Teachers who felt confident in their recognition skills were better equipped to apply strategies that support their students, highlighting the interconnected nature of awareness and practical application, as confirmed by Schmidt and Čagran (2011). As Križnar (2019) also mentioned, this emphasises the significance of integrated training programmes that combine theoretical knowledge with hands-on experience.

Practical experience also helped shape teachers' confidence and competence. Teachers with firsthand experience teaching students with ASD rated themselves as better prepared to meet their needs (H4), as confirmed by Šilc and Schmidt (2022). This result highlights the importance of providing opportunities for collaborative learning to bridge the gap between theoretical understanding and practical application.

5 Conclusion

The present research demonstrates the vital role of various adaptations in facilitating the inclusion of students with ASD in music education. Teachers who had previously worked with students with ASD were more confident and effective in implementing strategies such as consistent routines, quiet spaces, and environmental modifications, emphasising the importance of practical exposure and experience.

Although many teachers rated themselves as partially prepared to recognise and address the needs of students with ASD, the findings highlight the need for more targeted training, particularly for those with little to no experience. Providing opportunities for hands-on learning could help bridge this gap, ensuring that teachers are adequately prepared to support all students.

Creating inclusive classrooms requires a combination of awareness, adaptability, and support. Schools can create learning environments that promote the growth and well-being of all students, regardless of ability, by cultivating an inclusive culture and providing teachers with the resources and training they require.

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