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Integrating Applied Behaviour Analysis (ABA) and the VB-MAPP in the inclusive education of pupils with autism spectrum disorder: an exploratory qualitative study in a resource centre for assessment and support

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ABSTRACT

This study explores how the integration of Applied Behaviour Analysis (ABA) and the VB-MAPP (Verbal Behaviour Milestones Assessment and Placement Programme) helps to support the educational inclusion of pupils with autism spectrum disorder (ASD) in Resource Centres for

Qualification and Support (SRQS) in Morocco. A qualitative methodology was employed, utilising semi-structured interviews with four SRQS managers in the province of Tiznit. The interviews were transcribed and then analysed in NVivo, combining lexical analysis (frequencies, word clouds) with thematic analysis, adopting an inductive and constructivist epistemological approach. The results show that the VB-MAPP is primarily used as a decision-making tool (profiling,

identifying barriers and prioritising 2–3 functional objectives), whilst ABA operationalises the intervention through structured teaching procedures (reinforcement, guidance/fading, prevention, teaching alternatives) and monitoring using simple indicators. Transition to mainstream classes appears to be the central mechanism linking SRQS and inclusion, subject to organisational conditions (coordination, resources, training/supervision, school culture). The conclusions highlight the value of a decision → action → transfer chain and propose practical implications for standardising monitoring and ensuring continuity between SRQS, the classroom and the family.

Lexical parameters (NVivo): stopwords were excluded; a minimum length of 3 characters was applied; spelling variants were grouped together (e.g. ‘VB-MAPP’, ‘VBMAPP’); relevant compound words were retained where possible. Finally, the colours in the word cloud have no analytical value in themselves: they serve solely to improve visual readability.

Keywords: ABA; VB-MAPP; ASD; inclusive education; SRQS.

1. Introduction

The inclusion of pupils with autism spectrum disorder (ASD) in mainstream education is now a priority issue for education systems, in relation to children’s rights, equity and the quality of learning. In Morocco, the gradual development of inclusive education schemes has been accompanied by the establishment and expansion of Resource Centres for Qualification and Support (SRQS), designed as support structures intended to meet special educational needs, support teachers in mainstream classes and promote the effective participation of pupils with ASD within mainstream schooling. In practice, however, inclusion remains a complex process, subject to recurring challenges: heterogeneity of profiles, difficulties with functional communication, sensory and behavioural overload in group settings, challenging behaviours, a lack of time for coordination, limited material resources, as well as significant needs for training and supervision of practitioners.

In this context, two intervention frameworks are frequently utilised by professionals: Applied Behaviour Analysis (ABA) and the VB-MAPP (Verbal Behaviour Milestones Assessment and Placement Programme). On the one hand, ABA offers a structured teaching approach based on analysing the function of behaviour, reinforcing appropriate behaviours, step-by-step learning, preventing situations leading to failure, and adjusting procedures based on observable indicators (frequency, duration, success rate, engagement). On the other

hand, the VB-MAPP is an assessment and planning tool focused on language and functional skills, enabling the pupil’s level to be profiled, learning priorities to be identified, and barriers likely to hinder learning to be pinpointed. In practice, the challenge is not limited to the effectiveness of each approach taken in isolation, but concerns above all how their integration can help to a higher quality of inclusion: assessing in detail, prioritising realistically, teaching transferable functional skills, and then generalising these gains to the mainstream classroom.

This study therefore examines the combined effect of ABA and VB-MAPP on the educational inclusion of pupils with ASD in the province of Tiznit, focusing on the experiences and perceptions of SRQS staff. It aims to understand how these professionals utilise the VB-MAPP to inform pedagogical decision-making (what to target, in what order, with what prerequisites), and how ABA is subsequently used to implement teaching procedures (how to intervene, how to prevent, how to reinforce, how to adjust). The aim is also to identify the conditions that make this integration truly inclusive, that is, capable of producing observable effects on classroom participation, the stability of routines, communication and autonomy, whilst minimising gaps in support between the resource room, the mainstream classroom and the family.

Based on these issues, we formulate the following research question: how does the integration of ABA and VB-MAPP influence the educational inclusion of pupils with ASD within SRQSs? To answer this, three research questions guide the analysis: (1) how is VB-MAPP used to profile skills, identify barriers and prioritise functional objectives? (2) What ABA-based strategies are implemented to teach priority skills and reduce behaviours that hinder classroom participation? (3) To what extent does the combination of ABA and VB-MAPP promote the generalisation of skills and progressive inclusion, and under what contextual conditions (coordination, resources, time, supervision, school culture)?

The methodology adopted is qualitative in nature, based on semi-structured interviews conducted with four SRQS managers in Tiznit. The interviews were transcribed and then analysed using NVivo, combining lexical analysis (frequencies, word cloud) with thematic analysis to ensure interpretative rigour. The article is then structured into several sections: (2) contextualisation of inclusion in SRQS, (3) conceptual framework and VB-MAPP/ABA integration model, (4) methodology, (5) content analysis of the interviews, (6) discussion, followed by (7) conclusion, limitations and future directions.

2. Inclusive education and SRQS in Morocco: implementation framework

In the Moroccan context, inclusive education is underpinned by a progressive institutional approach aimed at reducing interruptions to educational pathways and improving educational accessibility. SRQs form part of this approach as a support mechanism, rather than as a substitute for the mainstream classroom. They generally fulfil three complementary functions: (i) contributing to the identification and assessment of needs, (ii) offering sessions focused on priority skills (functional communication, self-regulation, learning prerequisites), and (iii) supporting coordination with the class teacher and the family in order to organise the transfer of learning to the mainstream classroom. The challenges identified in the international literature regarding the implementation of inclusion (coordination time, resources, training, consistency across stakeholders) are also central to school environments with support systems in place (UNESCO, 2020).

For pupils with ASD, the quality of inclusion depends in particular on the school system's ability to (a) adapt the learning environment, (b) explicitly teach transferable functional skills, and (c) ensure consistent participation in group settings. In this context, the use of planning tools (VB-MAPP) and structured teaching procedures (ABA) can enhance the consistency of interventions. However, the main challenge remains the alignment between the resource room and the mainstream classroom: without shared routines, common tools and time for coordination, learning risks remaining confined to the resource room, limiting generalisation and thus effective inclusion.

3. Conceptual framework and VB-MAPP/ABA integration model

3.1. ASD and the challenges of mainstream schooling

Autism spectrum disorder (ASD) is characterised by significant developmental heterogeneity, with profiles marked by distinctive features in communication, flexibility and, in some cases, sensory and emotional regulation. In a school setting, these characteristics frequently result in difficulties in following group instructions, fluctuations in attention and engagement, vulnerability during transitions and, in some cases, challenging behaviours that may hinder participation. From an inclusive perspective, the challenge goes beyond academic success alone: it is about creating the conditions for attendance, participation and progress within a group setting (UNESCO, 2020).

3.2. ABA in the school context: principles and contributions to inclusion

Applied Behaviour Analysis (ABA) provides an intervention framework based on the structured teaching of skills and the adjustment of procedures based on observable indicators. In school settings, ABA is used to increase behaviours that facilitate learning and reduce behaviours that hinder participation, through strategies such as differential reinforcement, prompting/fading, prevention and the teaching of functional alternatives. Research reviews generally report favourable effects of ABA-based interventions on key areas for children with ASD, particularly communication and adaptive skills (Yu et al., 2020).

3.3. The VB-MAPP: assessment, prioritisation and barriers to learning

The VB-MAPP (Verbal Behaviour Milestones Assessment and Placement Programme) is a tool used to assess language and social skills, determine the level of developmental progress, establish teaching priorities and identify barriers that may limit learning (Sundberg, 2008). In the literature, the VB-MAPP is described as a tool for translating a skills profile into educational objectives, provided that professionals are trained in its administration and in interpreting the results (Barnes et al., 2014).

3.4. Integrating VB-MAPP and ABA: decision → action → generalisation

The integration of VB-MAPP and ABA can be understood as a coherent sequence of steps: (1) assess and profile (VB-MAPP), (2) prioritising realistic functional objectives (VB-MAPP), (3) teaching via structured and adjustable procedures (ABA), and then (4) organising generalisation to the mainstream classroom (shared resources, coordination, shared routines). This logic corresponds to an inclusive approach centred on transfer and participation in mainstream settings (UNESCO, 2020).

3.5. Conceptual model of the study

The conceptual model formalises the assessment → decision → intervention → inclusion framework, as described in the literature on ABA-based interventions and planning tools such as the VB-MAPP (Sundberg, 2008; Barnes et al., 2014). In our study, the VB-MAPP is regarded as a profiling and prioritisation tool, whilst ABA operationalises the intervention through teaching procedures and indicator-based regulation. Inclusion is understood as a gradual process observable through classroom participation, stability of routines, functional communication, autonomy and the

generalisation of skills (UNESCO, 2020). (VB-MAPP → educational decision → ABA → inclusion.)

4. Methodology

Our study is based on a qualitative approach aimed at understanding, through the accounts of practitioners in the field, how the VB-MAPP/ABA integration operates within the SRQS and how it is perceived as contributing (or not) to the inclusion of pupils with ASD. The epistemological approach adopted is inductive and constructivist: analytical categories are not imposed a priori, but are constructed progressively from the experiences described by the participants, in order to reflect as closely as possible, the local logic of implementation and contextual constraints.

4.1. Sampling strategy and recruitment

Purposive sampling was used to select SRQS coordinators representing contrasting settings, with the aim of shedding light on the variability in practices relating to the integration of VB and MAPP/ABA. The operational criteria selected were: (a) length of service in the SRQS role, (b) type of school (schools with large pupil numbers vs. smaller ones), (c) level of resources and tools available, and (d) coordination dynamics (presence or absence of formalised routines with mainstream classes and families). Access to the fieldwork setting was facilitated by local professional networks and the consent of the relevant school management teams. Participants were coded R1 to R4 to ensure anonymity.

4.2. Data sufficiency and saturation

Although the sample size (N=4) is limited, the study is exploratory in nature and aims to provide a detailed understanding of the mechanisms of coordination and the conditions for implementation within the SRQS context. Data sufficiency was assessed on the basis of (i) the depth of the verbatim transcripts, (ii) the repetition of central discursive themes (assessment/prioritisation, prevention, reinforcement, generalisation), and (iii) the convergence between lexical and thematic analysis. Thematic saturation was considered to have been reached when the addition of further interviews no longer yielded any substantially distinct new categories, but mainly variations in intensity and contextualised examples.

4.3. Coding procedure, reliability and audit trail

The thematic analysis followed a three-stage inductive approach: (1) open coding of units of meaning (actions, decisions, obstacles, effects), (2) axial grouping into categories (e.g. 'prioritisation', 'prevention', 'coordination', 'transfer/generalisation'), then (3) stabilisation of themes and

articulation with the conceptual model. Partial double coding was carried out on a subset of the corpus, followed by a consensus discussion to harmonise code definitions. Traceability was ensured through an analysis log (NVivo memos), the retention of codebook versions and the archiving of queries (word frequency, matrices).

4.4. Ethical considerations

Participants were provided with clear information on the study's objectives, the scientific use of the data and their right to withdraw. Informed consent was obtained prior to recording. The transcripts were anonymised (removal of pupils' and schools' names) and stored on a secure medium, accessible only to the researchers. The presentation of the results focuses on non-identifying extracts and the R1–R4 coding system.

4.5. Fieldwork and participants

The field of study corresponds to the SRQs in the province of Tiznit. Four SRQS managers (N = 4) took part in the study. This choice is based on a qualitative approach seeking depth rather than statistical representativeness: the aim is to identify patterns of meaning, mechanisms and conditions of implementation. Participants were selected to reflect contrasting contexts (level of resources, methods of coordination with the mainstream class, experience and leadership styles), in order to enrich the comparison of cases and to better understand the factors that facilitate or hinder the transfer of learning outcomes to the mainstream class.

4.6. Instrument, data collection and ethics

Data collection is based on semi-structured interviews lasting an average of 20 to 30 minutes, conducted using a guide structured around four key areas: (1) the functioning of the SRQS and barriers to inclusion, (2) ABA practices in a school setting, (3) uses of the VB-MAPP, (4) coordination and perceived effects on inclusion, as well as recommendations. The semi-structured approach aims to ensure the comparability of themes across participants whilst allowing unexpected dimensions to emerge. Informed consent was obtained prior to data collection; the anonymity of the respondents was strictly maintained (R1–R4) to encourage candid and in-depth responses, in accordance with ethical standards for qualitative research.

4.7. Data processing and analysis

The interviews were transcribed in full and then imported into NVivo software, which is recognised for its ability to structure and systematically process textual data. The analysis

combines two complementary levels: (1) a lexical analysis aimed at identifying the frequency and salience of terms (most frequent words, word cloud) after excluding function words, in order to identify the central concepts of the corpus; (2) an inductive thematic analysis aimed at constructing categories and emerging themes (initial coding, grouping, cross-case comparison), enabling the interpretation of the mechanisms underpinning the VB–MAPP/ABA integration, the perceived effects and the conditions of implementation. This combination constitutes an internal triangulation (lexical + thematic) that reinforces the interpretative validity of the results.

5. Content analysis

5.1. Lexical analysis

The corpus consists of the full transcripts of the interviews (R1–R4). In order to identify key concepts, the lexical analysis was carried out following standard pre-processing: converting text to lower case, removing punctuation and excluding function words (articles, prepositions, pronouns). This technical approach aims to focus on meaningful terms and to better highlight the central concepts relating to the VB–MAPP/ABA framework and inclusion in mainstream classrooms.

Table 1 presents the 20 most frequent words in the corpus, after excluding function words.

Table 1. The 20 most frequent words (interviews; function words excluded).

Word	Occurrences	% of corpus
class	98	8.68
pupil	92	8.15
inclusion	81	7.17
communication	77	6.82
objectives	73	6.47
strengthening	70	6.2

routines	66	5.85
generalisation	62	5.49
VB-MAPP	58	5.14
milestones	57	5.05
time	54	4.78
SRQS	52	4.61
coordination	48	4.25
family	45	3.99
teacher	44	3.9
data	41	3.63
instructions	38	3.37
transitions	36	3.19
pictograms	34	3.01
help	31	2.75

5.1.1. Word cloud of the corpus

Figure 2 shows the word cloud generated from the corpus. The size of the words reflects their relative frequency: the larger the word, the more frequently it occurs. The colours are used to visually distinguish between terms and to make the word cloud easier to read.

5.2.1. T1: VB-MAPP: profiling, identifying barriers and prioritising

Respondents describe the VB-MAPP as a framework that structures pedagogical decision-making. It is used to build a skills profile and to identify obstacles that explain stagnation or instability in the classroom. A common theme is the deliberate reduction in the number of objectives: prioritisation is limited to 2–3 functional targets in order to increase feasibility and transferability to mainstream classrooms. This prioritisation is frequently organised around functional communication, receptive prerequisites and basic autonomy.

5.2.2. T2: ABA: teaching alternatives and stabilising participation

The ABA practices reported focus primarily on the skills that enable access to learning: asking for a break or help, tolerating transitions, following a simple instruction, and maintaining engagement with a short task. The associated procedures combine reinforcement, prompting/fading, visual routines and task breaking down. Respondents emphasise the ‘ethical and functional’ nature of the objectives, in order to avoid a mechanical approach and to prioritise well-being and participation in the classroom.

5.2.3. T3: Data and adjustment

Data-driven management is practised by all respondents, though with varying degrees of formalisation. The indicators mentioned include the success rate on trials, the frequency/duration of challenging behaviours, the number of spontaneous requests and the level of prompts required. Adjustment is described as pragmatic: in the event of stagnation, practitioners modify a variable (task, reinforcer, guidance, environment) or redefine the objective to make it achievable, which constitutes a continuous regulatory mechanism.

5.2.4. T4: Generalisation: a key condition for ‘genuine’ inclusion

Generalisation appears to be the pivotal mechanism linking SRQS to inclusion. The strategies reported converge: identical materials in the support room and in the classroom, harmonised instructions, shared routines, short information sheets for the teacher and, occasionally, mini-assignments to be completed at home. Inclusion is described as progressive and measurable: a gradual increase in time spent in the classroom, a reduction in interruptions and an improvement in participation.

5.2.5. T5: Barriers and drivers

The most frequently cited barriers relate to a lack of time for coordination, workload (class sizes and heterogeneity), limited material resources and insufficient access to supervision. Enablers, by contrast, are associated with an inclusive school culture, stable routines, regular coordination between the SRQS, the classroom and families, and standardised monitoring tools. Taken together, this suggests that the VB-MAPP/ABA approach produces inclusive outcomes when the institutional environment ensures continuity of implementation.

6. Discussion of the results

This study highlights a logic underpinning the VB-MAPP/ABA integration, understood as a decision → action → transfer chain. The results confirm that VB-MAPP is used to reduce decision-making uncertainty (where to start, what priorities to set, what obstacles to address), whilst ABA provides adjustable teaching procedures and measurable, . This combination aligns with the described uses of VB-MAPP as a planning/placement tool (Sundberg, 2008) and the value of structured behavioural interventions for functional and adaptive skills (Yu et al., 2020).

6.1. VB-MAPP and realistic prioritisation: avoiding a shift towards ‘immediate academic focus’

Discussions highlight a common tension in school settings: the pressure to meet academic targets can conflict with a lack of functional prerequisites. The VB-MAPP therefore serves as a guide to maintaining realistic priorities (communication, receptive skills, tolerance of transitions), which can prevent repeated instances of failure. In this sense, the tool structures pedagogical reasoning, but its effectiveness depends on training in its administration and interpretation (Barnes et al., 2014).

6.2. ABA and functional communication: stabilising access to the classroom

The findings highlight the importance of functional communication (asking for help/a break) as a means of reducing challenging behaviours and improving participation. This approach is consistent with recommendations regarding the teaching of communicative alternatives in behavioural intervention plans (Tiger et al., 2008). Furthermore, the emphasis on routines and prevention aligns with naturalistic approaches that aim to embed learning in meaningful contexts and promote generalisation (Schreibman et al., 2015).

6.3. Generalisation: the central criterion of inclusion

The most salient mechanism is generalisation. Respondents associate inclusion with observable indicators (time spent in class, engagement, fewer interruptions) and consider that a skill ‘counts’ only if it is sustained in the classroom. This view corresponds to the idea that the quality of implementation and generalisation determine the actual impact of evidence-based practices in school settings (Odom et al., 2010).

6.4. A systemic perspective on the SRQS–classroom–family: conditions for transferability

The barriers and enablers identified suggest a systemic perspective: the SRQS cannot drive inclusion on its own. The expected outcomes depend on the institutionalisation of coordination time, the sharing of resources and supervision designed to improve the fidelity of implementation. This conclusion is in line with recommendations that inclusion should be seen as a transformation of the entire educational environment rather than the addition of an isolated scheme (UNESCO, 2020).

6.5. Limitations and future directions

This study is based on a small sample (N = 4) and on self-reported data; it does not directly measure standardised progress among pupils. Future research directions include the incorporation of longitudinal indicators (VB-MAPP scores, time spent engaged in class, frequency/duration of challenging behaviours), multi-source triangulation (class teachers, families, observations) and implementation studies (fidelity) to better link organisational conditions and inclusive outcomes.

7. Conclusion

This qualitative study explores how SRQS practitioners integrate the VB-MAPP and ABA to support the educational inclusion of pupils with ASD. The results reveal a convergent approach: the VB-MAPP is used to profile and prioritise realistic functional objectives, whilst ABA enables teaching to be operationalised through structured, adjustable and indicator-driven procedures. Transition to mainstream classrooms appears to be the central mechanism linking SRQS intervention to effective inclusion.

In practical terms, the findings suggest four recommendations: (1) to standardise a ‘minimum package’ for monitoring (criterion-based objectives, simple indicators, teacher’s guide), (2) institutionalise a dedicated coordination session involving SRQS, the class and the family, (3) prioritise functional communication and routines as prerequisites for

access to learning, and (4) develop training and supervision in functional analysis, teaching alternatives and generalisation. From a scientific perspective, the study supports the relevance of a ‘decision → action → transfer’ approach and calls for mixed-methods and longitudinal research to link the VB-MAPP/ABA framework more directly to measurable indicators of inclusion.

Finally, in the Moroccan context, the effectiveness of this integration depends on systemic coherence: special education services (SRQS) act as a lever for inclusion when their interventions are embedded within an inclusive school culture and a continuity of practices—rather than within a framework of prolonged withdrawal or parallel schooling (UNESCO, 2020).

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