Developing a Pilot Instrument to Assess Factors Influencing Australian Teachers' Intentions to Use Evidence-Based Practices in Autism Education

By

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Abstract

Background: Teachers without special education backgrounds or training are increasingly responsible for instructing students with Autism. Research has consistently demonstrated the efficacy of evidence-based practices in special education, yet little is known about general teachers' intention to implement these practices and the factors that motivate their use. Ajzen's Theory of Planned Behaviour (TPB)(Ajzen, 1991) suggests that intentions can effectively predict such behaviour and are directly influenced by attitudes, subjective norms, and perceived behavioural control. Nevertheless, no existing instrument measures general teachers' beliefs – such as intentions (IN), attitudes (AT), subjective norms (SN), and perceived behavioural control (PBC) – regarding the use of EBPs in the Australian context. To address this gap the current study aimed to evaluate and refine a 33-item self-constructed instrument, named 'Teacher intention toward the use of evidence-based practices' (TIUE) questionnaire.

Method: This study employed a convergent mixed methods design using online surveys to evaluate and develop the TIUE. Development of the TIUE questionnaire involved three stages: instrument development, alignment check and self-assessment. Participants (experts, n=3; educators, n=2) provided qualitative and quantitative feedback via an online survey adapted from the Question Appraisal System (Willis & Lessler, 1999).

Result: The self-alignment check confirmed that 94% (32/34) of the questionnaire items were aligned to address the guiding research question. Quantitative evaluation indicated that a majority of questions were issue free in the self-assessment (205/ 230, 89%), expert review (69/ 112, 62%) and teacher group (106 /118, 89%). Qualitative results indicated areas for improvement in clarity, inclusivity, and effectiveness. A total of 24 changes were made, the final questionnaire retains 33 distinct questions.

Conclusion: This research developed, evaluated, and refined the TIUE questionnaire. Underpinned by the TPB, the TIUE was designed to assess general education teachers' intentions to use EBPs for students with Autism. The refined questionnaire provides a foundation for future research to investigate TPB-related factors, potentially supporting inclusive education and promoting EBP implementation among mainstream teachers. Further validation through a larger pilot study and psychometric analysis is required.

Declaration

I certify that this thesis:

1. does not incorporate without acknowledgment any material previously submitted for a degree or diploma in any university

2. and the research within will not be submitted for any other future degree or diploma without the permission of Flinders University; and

3. to the best of my knowledge and belief, does not contain any material previously published or written by another person except where due reference is made in the text.

Signed.....  .....

Date.....8th December, 2024.....

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List of abbreviations

AT	Attitudes
EBPs	Evidence-based Practices
IFL	Identity-first Language
IN	Intentions
SN	Subjective Norms
TIUE	Teacher Intention Toward the Use of Evidence-based Practices
TPB	Theory of Planned Behaviour (Ajzen, 1991)
PBC	Perceived Behavioural Control
PFL	Person-first Language *Disclaimer: PFL is used in this article to uphold self-acceptance and acknowledge the combination of strengths, needs and experiences of the neurodivergent community.*
QAS-99	Question Appraisal System-99 (Willis & Lessler, 1999)

CHAPTER 1: INTRODUCTION

Education plays a crucial role in promoting social cohesion and social inclusion (Russell et al., 2023). Due to an increase in Autism diagnoses and the advancement of inclusive education, a growing number of children with Autism are enrolling in mainstream schools (Australian Institute of Health and Welfare, 2017). As a result, teachers without special education qualifications are responsible for educating these students (Busby et al., 2012). Despite efforts to include individuals with Autism in mainstream classrooms, adequate support for both staff and students remains insufficient (Boyle et al., 2023; Costello & Boyle, 2013). However, evidence-based practices (EBPs) have been extensively researched and have shown tremendous potential in improving learning experiences for students with Autism, particularly in areas such as academic performance, social interaction, and self-regulation abilities (Howard et al., 2015). The role of educators is crucial in implementing inclusive education, and their attitudes towards inclusion are vital for its success (Ainscow, 2020). Therefore, understanding what, how and why teachers select EBPs when teaching students with Autism is essential.

This article uses person-first language (PFL) (i.e. children with autism) instead of identify-first language (IFL)(i.e. Autistic children) in response to the advocacy of Vivanti (2020). The author acknowledges that there is no consensus in the literature regarding the preferred terminology among individuals with Autism. However, PFL is commonly applied in research and clinical environments (Crocker and Smith, 2019) and is preferred by the author, as it emphasises the identity and humanity of the individual rather than their disability (Buijsman, 2023).

1.1 Inclusive Education Context

With an increasing number of students with Autism entering mainstream Australian schools, the education system must ensure that EBPs are effectively implemented to support their developmental and academic success (Hume et al., 2021). Effective inclusion is not only a legislative, social, and moral responsibility but also an economic imperative, as it directly impacts the academic, social-emotional, and mental health development of children with ASD (Merry, 2020; Travers, 2017). Mainstream teachers play a crucial role in fostering inclusive education, as they are primarily responsible for enacting inclusive educational

practices in their classrooms (Garrad, 2022). However, despite the recognised benefits of EBPs, their implementation remains inconsistent across Australian schools (Garrad et al., 2021; Sulek et al., 2021). This inconsistency can hinder the educational experiences of students with disabilities, including those with Autism. Therefore, understanding mainstream teachers' intentions to adopt EBPs is essential for strengthening inclusive classroom practices and ensuring that students with Autism receive the necessary support to thrive in mainstream education.

1.2 Introducing the theoretical framework – the Theory of Planned Behaviour

There are multiple theoretical frameworks for understanding people's behavioural intentions and decision-making processes. Behavioural intention is a variable based on people's motivation and indicates the strength of their willingness and effort to perform a behaviour (Aptyka et al., 2022). This concept has been explored in previous studies in health science fields, which have found similar patterns and recommend that people's behavioural intention impacts providers' implementation of EBPs in community settings (Godin et al., 1993; Ingersoll et al., 2018; Ruble et al., 2018; Williams et al., 2011). One model that has been extensively used to understand and predict various health-related behaviours is the Theory of Planned Behaviour (TPB)(Ajzen, 1991), illustrated in Figure 1.1. According to Ajzen (1991), individuals who firmly intend to perform a behaviour are most likely to, with the strength of intention directly influencing the likelihood of completing the intended behaviour. Recently, the model has been adapted and explored in educational contexts, particularly for understanding the experience of children with Autism (Fishman et al., 2018). In this research, the TPB model will serve as the theoretical framework for understanding teachers' decision-making process in adopting EBPs at mainstream schools (Armitage & Conner, 2001; Opoku et al., 2021). This framework is particularly relevant, as it can help elucidate the factors that influence teachers' intentions to adopt and implement EBPs, ultimately informing strategies to support their use in educational settings. The components of the TPB will be illustrated in Chapter 2.

Figure 1.1
The Theory of Planned Behaviour (Ajzen, 1991)

Figure removed due to copyright restriction

Note. From *Changing Behaviour Using the Theory of Planned Behaviour* (p. 19), by I. Ajzen and P. Schmidt, in M. S. Hagger, L. D. Cameron, K. Hamilton, N. Hankonen, & T. Lintunen (Eds.), *The Handbook of Behaviour Change*, 2020, Cambridge University Press. Copyright 2020 by Cambridge University Press.

1.3 Statement of the Problem

At school, especially for teaching students with Autism, the gap between the development of Evidence-Based Practices (EBPs) and their translation into practice has always existed (Locke et al., 2019; Paynter et al., 2017). Despite increased awareness of the importance of EBPs, their application in schools with Autism education remains limited (Cook et al., 2015; Garrad et al., 2021). This limited use of EBPs has led to criticism of special education teachers who may not always choose evidence-based practice (Travers, 2017). What is more, the adoption of non- EBPs can negatively impact the development of students with special needs, including those with Autism (Paynter et al., 2018).

Researchers and educational leaders have sought to identify strategies at various levels to facilitate the adoption of effective practices in the academic sector (Forman et al., 2013; Owens et al., 2010). Several aspects of the organisational context, such as individual perceptions, emotional responses, work environment characteristics, and principal leadership, act as key factors influencing the success or enhancement of EBP implementation (Cook et al., 2015). Both qualitative and quantitative research indicate that educators' beliefs about specific practices and their professional roles significantly impact the adoption and use of EBPs (Merle et al, 2023)). Although some scholars argue that beliefs and attitudes are

prerequisites for significant change in practices and improved outcomes in school (Jones et al., 2013), limited research has been conducted on the criteria teachers use in the decision-making processes regarding EBPs (Garrad et al., 2021). In addition, little attention has been paid to addressing educators' beliefs before and during the implementation of EBPs (Cook et al., 2015). Specifically, findings from Garrad et al. (2021) reveal that Australian teachers (n=151) considered the perception of an EBP's ability to meet the needs of their students with Autism as the most important criterion for determining its use. Nevertheless, the belief that an EBP did not meet their students' needs was the primary factor influencing their decision to cease use. However, this research does not specify whether the teachers recruited worked in general education settings or not. The paper reflects a gap of knowledge on whether there is a difference between factors affecting the implementation of EBPs between general education and special education teachers.

Previous studies highlighted significant disparities between general and special education teachers in identifying and employing EBPs (Segall & Campbell, 2012; Stormont et al., 2011). For instance, Stormont et al. (2011) found that general education teachers were significantly less adept at identifying and differentiating EBPs compared to special education teachers. Segall and Campbell (2012) attempted to explain the differences attributed to the different attitudes towards disabilities and inclusion among the teachers. Potential factors such as trustworthiness, usability, and accessibility of EBPs are identified as influencing teacher's implementation of EBPs (Carnine, 1995; Knight et al., 2019). Despite all these studies, there remains a limited understanding of the factors that are specific to general teachers' decision-making processes when it comes to selecting and implementing the EBPs in teaching students with Autism.

To improve the translation of evidence into practice, there have been discussions on the need for an underlying framework, such as Ajzen's Theory of Planned Behaviour (TPB), as the foundation to understand and guide the development of how EBPs can be implemented (Eccles et al., 2005). While some surveys have examined the constructs related to human behaviour using the TPB theory (Andarge et al., 2020; Finke et al., 2015; George, 2004; Hugh et al., 2022; McEachan et al., 2011; Oliveira et al., 2022), these investigations have not specifically addressed the context of general teachers employing EBPs for teaching students with Autism. Furthermore, there is a notable absence of research focusing on this issue within the Australian context and therefore an insufficient understanding of how these factors interact with general teachers' intentions and behaviours in the context of Ajzen's TPB.

1.4 Significance of Study

There have been significant studies identifying the benefits of implementation of EBPs at school, for example, it has been found to improve program quality, teacher fidelity and student goal attainment (Sam et al., 2021). Another study specifically pointed out the improvement in learning outcomes for students with autism. It was found that EBPs support their inclusion in mainstream school environments (Tamara Marder & Laurie U deBettencourt, 2015). To achieve these positive outcomes, a prerequisite is understanding teachers' intention in implementing EBPs.

Garrad et al (2021) highlighted a significant gap in understanding factors that affect general teachers' intentions and behaviours when selecting EBPs for teaching students with Autism. Specifically, there was no availability of instruments that measure general education teachers' beliefs with the application of TPB. For instance, intentions (IN), attitudes (AT), subjective norms (SN), and perceived behavioural control (PBC) when deciding in using the EBPs in Autism education require a valid tool to measure (Merle et al., 2023; Ruble et al., 2018). This study addressed this gap by refining and evaluating a newly developed questionnaire that was originally proposed by the author of the TPB model, adapting it to the specific research context of this study. Instrument refinement was chosen as it is an essential step for developing reliable and valid measures. Skipping this step led to inaccurate or misleading the integrity of the research (Smith et al., 1995). Ultimately, exploring teachers' beliefs about using EBPs for students with Autism in the future.

Teachers' motivation to apply new knowledge is a primary factor influencing teachers' engagement in professional development sessions (Kyndt et al., 2016; Zhang et al., 2021). This research was significant as it aimed to develop a tool that could enhance understanding of teachers' beliefs and planned behaviour, which might inform professional development programs and the design of more effective educational strategies. By improving understanding of the factors influencing teachers' adoption of EBPs, this instrument could be used to measure readiness for implementation of EBPs in an education context and support ongoing implementation and sustainment of school-based EBPs (Cook et al., 2015). Consequently, it may contribute to better educational outcomes for students with Autism and increase overall teaching effectiveness. The instrument was refined in this study, which could be pivotal in shaping future research and educational practices. Similar to the research demonstrating how the development of measurement tools for TPB constructs impacts policies in the healthcare sector, the use of the well-designed questionnaire may ultimately

inform teachers' professional development or teaching practices in inclusive settings, policy change and enhance the quality of education for students with Autism in inclusive settings (Boyko et al., 2011). This introductory chapter outlined the importance of this research by discussing the problem and the significance of the study. The subsequent chapters will critically examine existing literature on EBPs and TPB and their implications in Autism education.

CHAPTER 2: REVIEW OF THE LITERATURE

This chapter delivers a broad review of the literature in three key sections: Section 2.1 explores established and effective EBPs for teaching students with Autism. Section 2.2 examines the components of the TPB model and illustrate examples within the inclusive education context (Armitage & Conner, 2001; Opoku et al., 2021). Section 2.3 illustrates the development and refinement of a self-constructed questionnaire designed to understand teachers' beliefs and intentions regarding the use of EBPs with students with Autism. Lastly, this chapter discusses the overarching aim of this study and introduces the Question Appraisal System, which is used for identifying the instrument problem in this study (Schaad et al., 2020; Willis & Lessler, 1999).

2.1 Evidence-based Instructional Practices in Autism

Autism spectrum disorder, a neurodevelopmental condition, has shown a consistent increase in both prevalence and incidence over the last two decades (Finke et al., 2015; Jones et al., 2021). Most children and adolescents (aged 5–20) identified with Autism (85%) face challenges within the school environment, with approximately 72% attending mainstream schools (Australian Institute of Health and Welfare, 2017). In Australia, the Australian Bureau of Statistics (2024) reported a 41.8% increase in the number of Australians diagnosed with Autism in 2022 compared to 2018, underscoring the growing need for effective educational strategies for students with Autism. According to data from the Australian Bureau of Statistics (2015, 2018), the percentage of students with Autism in special classes in mainstream schools has dropped from 21.8% to 19.9%. On the other hand, the percentage of students with Autism in special schools decreased from 27.5% to 20.0%, while the percentage of students with Autism in regular classes increased from 48.72% to 55.71%. There is a trend of more students with Autism being in the same school or even the same classroom as other students. Therefore, there is a growing need for general education teachers to implement EBPs to enhance learning outcomes for students with Autism.

In the last fifty years, there has been a sustained effort to integrate educational systems, consistent with Article 26 in the Universal Declaration of Human Rights (United Nations, 1948), which asserts that education is a fundamental right for all children without any exceptions. This commitment is further reinforced by Article 24 in the Convention on the Rights of Persons with Disabilities (United Nations, 2006), which recognises the right to

inclusive education for individuals with disabilities. Additionally, the Disability Standards for Education mandate that all educators make reasonable adjustments that facilitate students with special needs to engage in learning on an equal basis with their peers without disabilities (Australian Government, 2005; UNESCO, 1994). The increasing prevalence of Autism diagnoses and the legislative requirements place the responsibility on general education teachers to deliver high-quality and effective education to students with Autism (Williams et al., 2011).

Teaching students with Autism presents unique challenges. Some teachers lack confidence in their ability to assist those with reading difficulties, hold lower expectations for these students' learning potential, and believe that the responsibility for educating students with disabilities should primarily fall on specialists rather than general education teachers (De Bruin, 2022; Serry et al., 2022). In addition, teachers also need to base intervention decisions on student needs, considering factors such as the characteristics of students with Autism, their knowledge of the student, and adequate training in multiple EBPs to ensure effective matching of practices to need (Garrad et al., 2021). A student-centred approach is particularly crucial, as not all interventions will work for all students (Cook et al., 2012). As a result, teachers are required to modify or implement appropriate alternative EBP based on their specific teaching contexts and their knowledge of students (Stahmer et al., 2015). Teaching students with Autism usually requires establishing an individualised education program (IEP). The IEP is a special education program that outlines the educational responses to the additional support needs of students, providing a guideline for their learning and development experiences (Rashid et al., 2024). Developing an IEP usually involves a multidisciplinary team, which may include school psychologists, speech and language pathologists, occupational therapists, and other professionals. The team conducts assessments to establish the baseline of the child’s current functioning to inform the development of individualised goals and subsequently the appropriate types of support (Nur Akçin, 2022).

Autism is characterised by variations in social communication and restricted, repetitive behaviour (American Psychiatric Association, 2013). For example, while many children with Autism experience difficulties in social communication, Brignell et al. (2018) found that 25% to 30% of children with Autism do not acquire functional language skills or exhibit minimal verbal communication abilities. Repetitive and restricted behaviours, such as self-stimulatory actions, often disrupt the learning process (Jaffey & Ashwin, 2022). Consequently, individuals are more likely to be distracted or less engaged in class during instruction, resulting in disruptions in classroom academic activities (Rila et al., 2024).

Additionally, teachers perceived transition and social interaction as the most concerning issues in teaching students with Autism (Nah, 2020). To address these needs, educators need to utilise specialised, EBPs tailored to this population in their classroom (Sulek et al., 2019).

Numerous studies support the efficacy of specific instructional strategies for students with Autism (Howard et al., 2015; Sulek et al., 2019; Williams et al., 2011). Sulek et al. (2019) define EBPs as interventions that have demonstrated efficacy and clinical utility. However, while these EBPs are well-supported in the research environment, there are notable limitations in classroom-based research, their application in classrooms faces limitations in the context of a school environment (Cook & Cook, 2013). The implementation of EBPs is essential for enhancing students' learning outcomes and reducing undesired behaviour, on the other hand, ineffective instruction methods can lead to unfavourable results (Burns & Ysseldyke, 2009; Devi & Ganguly, 2022; Tamara Marder & Laurie U deBettencourt, 2015; Paynter & Keen, 2015). Nevertheless, while these EBPs are highly supported by research, their implementation in classroom settings presents challenges (Lee et al., 2017; Luiselli, 2014; Wong et al., 2015). This strengthens the need to further explore how EBPs can be effectively adapted for implementation in school settings.

In addition, general teachers' intention to use these EBPs remains unclear. Several studies show that teachers often receive and utilise information from informal sources such as colleagues or therapists (Francis et al., 2016: Paynter et al., 2017). As a result, different teachers may adopt different approaches to teaching, with some choosing untested methods over EBPs (Paynter & Keen, 2015). Thus, it brings attention to the need to understand teachers' intentions in using EBPs.

Hughes et al. (2017) emphasise there is no one-size-fits-all approach that applies to all students with autism, given the vast diversity of needs. Thus, teachers face a great challenge in identifying appropriate practices to support and teach skills to their students at school (Brock et al., 2020; Lubas et al., 2016; Ryan et al., 2014). When teachers are choosing and implementing interventions, researchers have identified different factors. For instance, Paynter et al. (2017) highlighted the importance of personal factors including teachers' views, experiences and attitudes. While there are also factors like consideration of individual student's needs, teachers' professional judgment and training experience (Hugh et al., 2022).

Understanding teachers' intentions can guide the creation of dissemination and implementation supports, thereby reducing unsuccessful attempts (Aarons et al., 2011; Hugh et al., 2022). However, there is limited research on factors that influence teachers' decision-making or their intentions when selecting different EBPs. This lack of knowledge raises questions about their practices and the reasoning behind their choices.

2.2 Theory of Planned Behaviour

The TPB framework was introduced in Chapter 1 (p., 2, figure 1.1). This section will provide a detailed explanation of the TPB model, including its components. Meta-analyses from Armitage and Conner (2001); McEachan et al. (2011) have demonstrated the TPB's high effectiveness in predicting behaviour. According to TPB, an individual's behaviour is dependent on their intention (IN), which is influenced by attitude (AT), subjective norms (SN), and perceived behavioural control (PBC) (Ajzen, 1991; Ajzen & Schmidt, 2020). See Table 2.1 for the descriptions and examples of TPB components. This model also explains how actual behavioural control may be constrained by limited resources and unforeseen obstacles (Ajzen, 1991). Later, these concepts will be elaborated in the following sections.

Table 2.1
Components of the Theory of Planned Behaviour

Components	Description	Examples in the educational context
INTENTION (IN)	Reflects the motivational factors influencing voluntary actions, driven by conscious intention.	The stronger a teacher's intention to use Evidence-Based Practices (EBPs), the more likely they are to implement them.

ATTITUDE (AT)	Predisposition to respond favourably or unfavourably to a behaviour based on its perceived outcome.	Teachers with a positive attitude towards an EBP are more likely to use it.
SUBJECTIVE NORM (SN)	Beliefs about others' expectations (e.g., administrators, colleagues) that influence behaviour.	Teachers are less likely to use an EBP if they believe their colleagues or administrators do not expect it.
PERCEIVED BEHAVIOURAL CONTROL (PBC)	Beliefs about factors that facilitate or hinder behaviour, including difficulty and available support.	Teachers may perceive an EBP as difficult to implement without mentorship, administrative support, or strong student relationships.

Intention, attitude, subjective norms and perceived behavioural control

To understand IN, AT, SN and PBC, it is essential to refer to Ajzen (1991) theory, which points out that IN reflects the motivational factors influencing actions. Actions are usually voluntary and result from conscious behavioural intention (Ajzen & Schmidt, 2020). In the context of inclusive education, the stronger the intent to use EBPs, the more likely it is to be implemented. However, educators face challenges in implementing EBPs within established policies and procedures (Wilson & Landa, 2019). Thus, a key focus of this research is developing a tool to improve our understanding of these challenges and educators' behavioural intention to use EBPs.

As mentioned, three factors (AT, SN and PBC) guide the intention to perform a behaviour (Ajzen, 1991). SN include beliefs about others' expectations and affects one's intention to perform an action (Ajzen, 1991). For instance, teachers will be less inclined to use certain EBPs if they believe their administrators or colleagues do not expect them to use EBPs. AT includes a predisposition to respond either favourably or unfavourably to a particular object or idea (Ajzen, 1991). For example, teachers may be more inclined to use an EBP if they hold a positive notion towards it. Last but not least, PBC contains the belief about factors that may either hinder or facilitate the performance of behaviour (Ajzen, 1991; Fishbein & Ajzen, 2010). This could include the level of difficulty perceived in using a particular EBP and the availability of support mechanisms, like mentorship, administrative support, and strong student relationships (Devi & Ganguly, 2022).

Although some researchers argue that the TPB does not account for all variables influencing behaviour (Rhodes et al., 2015; Sniehotta et al., 2014), TPB has the flexibility of including additional factors that are relevant to specific contexts (Ajzen, 1991). In the context of education, it makes TPB a potential framework for exploring teachers' intentions.

Application of TPB in Inclusive Autism Education

The application of the TPB in inclusive Autism education has been explored in previous studies. Ruble et al. (2018) found a positive connection between all three influences and teachers' behavioural intention (data collection). To illustrate, they found that special education teachers would have higher intention to perform the behaviour of interest (data collection) if their social norm (co-workers, administration, and parents) viewed this behaviour as important. Another study that applied TPB in inclusive Autism education supports the assumption that teachers' positive attitudes towards inclusive education, combined with high self-efficacy belief, lead to increased use of inclusive teaching practices (Schwab & Alnahdi, 2020). However, existing research lacks depth and has primarily focused on examining variables including teachers' attitudes towards inclusive education, their self-efficacy beliefs and their daily teaching practices.

Hellmich et al. (2019) have discovered that primary school teachers' daily practices in diverse general education classrooms are strongly influenced by their intentions to implement inclusive education and their attitudes toward it. However, these practices are not significantly affected by their collective self-efficacy beliefs or their perceptions of school management's expectations. Additionally, this study was conducted in Germany. Remarkably, teachers' attitudes impact their daily practices in such classrooms indirectly with their intentions to adopt inclusive education.

Additionally, Hugh et al. (2022) concluded that early childhood special education teachers' beliefs are aligned with the frequencies with which practices to be selected, and teachers' beliefs predicted which practices to be selected. It is observed that the TPB has been recently used to assess inclusive educational practice (Hellmich et al., 2019; Opoku et al., 2021; Schwab & Alnahdi, 2020), and examined with the implementations of EBPs for children with Autism in community settings (Fishman et al., 2018). Nonetheless, the connection between IN, AT, SN and PBC of general teachers in using EBPs when teaching students of Autism in an Australian general education setting remains unexplored.

Actual behavioural control to use the EBPs

Besides the three influences, Ajzen and Schmidt (2020) describe actual control as a key factor moderating the effect of intention on behaviour. Fishman et al. (2018) suggest that skills and abilities could influence the relationship between intentions and use, emphasising how a lack of skills and environmental barriers can limit the capacity to act on intentions. Therefore, the use of EBPs is affected by both intentions and the actual ability to act.

Training. In-service training, such as professional workshops and job coaching, can enhance educators' readiness to implement EBPs effectively (Alhossein, 2021). Educators without adequate special preparation often feel unprepared to effectively instruct students with Autism (Al Jaffal, 2024). However, varied preservice training and diverse settings among special and general educators may limit the findings' applicability (Sulek et al., 2019). Special educators in Australia are required to have specific training, while general educators, who may lack such training, may have lower confidence in the intervention selection (Stormont et al., 2011). Nonetheless, the relationship between general teachers' IN and their training level remains unclear.

Experience. Years of teaching experience do not necessarily enhance knowledge of EBPs (Alhossein, 2021). However, practical experience significantly affects educators' awareness and implementation of EBPs (Paynter et al., 2017). Devi and Ganguly (2022) emphasized that practical experiences such as lesson planning and classroom teaching improve preservice educators' comfort level in teaching students with Autism. However, whether experience enhances teachers' IN in using EBPs when teaching students with Autism remains unknown.

Knowledge. Educators are more likely to adopt EBPs that they are familiar with and know to be effective (Alhossein, 2021). However, limited time and knowledge can hinder their research on EBPs (Cook & Odom, 2013). Additionally, teachers working with autistic students might not have the same exposure to research-based techniques as those working with students with higher-incidence disabilities (Williams et al., 2011). Still, even though EBPs are recognized in special education, evidence-based and non-evidence-based practices coexist in classrooms (Sulek et al., 2019). The reasons behind this remain unexplored.

In summary, this review has highlighted various individual factors affecting educators' use of EBPs, with the TPB as a theoretical base. However, limited research exists on factors influencing teachers' choice of interventions and their training in using EBPs (Sulek et al., 2019). The gap between the availability of EBPs and their application in education implies a research-to-practice gap (Garrad et al., 2021). Addressing these gaps will guide future studies in reducing this gap in Australia's special education and Autism intervention, thereby improving the quality of education for students with Autism.

CHAPTER 3: Method - Instrument Development

Since no known globally and culturally sensitive instrument assessed the objective of the current study, a self-administered questionnaire was developed, named *Teacher Intention toward the Use of Evidence-based Practices (TIUE).* See Appendix B for the sample questionnaire TIUE. This process was informed by various resources related to questionnaire development (Cox & Cox, 2008; Creswell, 2018; Sue & Ritter, 2007), and followed the questionnaire development protocol designed by Ajzen (2019). The questionnaire underwent multiple stages of development. This process encompassed a literature review of existing instruments, item construction, and item design tailored to measure mainstream teachers' IN, AT, SN and PBC in using EBPs for teaching students with Autism in South Australia.

3.1 Instrument Development

Stage 1: Reviewing Literature on Existing Instruments

A comprehensive review of existing literature was conducted to identify instruments that had been used to measure IN, AT, SN, and PBC. Although several studies explored these four constructs using the TPB (Andarge et al., 2020; Demir, 2010; Finke et al., 2015; George, 2004; Lenski et al., 2019), each has done so in the context of different behaviours, resulting in varied instruments. With the sample questionnaire from Fishbein and Ajzen (2010) having served as a foundation, the researcher synthesised existing studies related to this area and modified them to generate an initial set of questions related to the IN, AT, SN, and PBC. See Appendix B for the sample questionnaire TIUE.

Stage 2: Constructing Questionnaire Items

The questionnaire was structured into three main sections. The first part consisted of screening sessions to ensure that respondents met the inclusion criteria for this survey. The second part included construct-related items comprising four domains concerning IN, AT, SN, and PBC. The third part covered teachers' demographics, which was useful for participant descriptions. All TPB constructs reviewed from the literature were selected with a minimum Cronbach's alpha of .70 as the cut point for internal consistency (Cronbach, 1951).

Definitions of EBPs. To ensure that all respondents held a common understanding of the seven identified EBPs that had been proven to be effective for students with Autism aged 6 to 12 (Howard et al., 2015), each practice was listed with definitions in the questionnaire.

Construct-related items. IN was measured by asking respondents how strongly they intended to perform the behaviour. The construct of IN was expressed through phrases like "I intend to", and "I am planning to" (Fishbein & Ajzen, 2010, p. 44). Various forms were used to measure how likely someone will engage in a behaviour, and adjectives such as *extremely likely – extremely unlikely, agree – disagree, definitely yes – definitely no* were incorporated in TIUE based on the recommendation by Fishbein and Ajzen (2010).

AT was approached as a higher-order construct involving an experimental and an instrumental dimension (Fishbein & Ajzen, 2010). Respondents were rated on a scale from -3 on the negative side to +3 on the positive side. A higher score reflects a more favourable attitude of the respondent toward the attitude object (Fishbein & Ajzen, 2010).

SN was assessed by asking whether respondents' significant others, such as those they value, believed they should or should not engage in a particular behaviour of interest (Fishbein & Ajzen, 2010). The construct of the SN was expressed in statements "most people who are important to me think I should" or "most people whose opinions I value think that it is" (Fishbein & Ajzen, 2010, p. 133).

PBC was measured with a variety of direct questions. The construct of PBC was captured through statements like "*performing this behaviour is up to me*", "*I can perform this behaviour if I really want to*", or "*I have the necessary skills and abilities to perform this behaviour*" (Fishbein & Ajzen, 2010, pp. 64-65).

Stage 3: Designing and Developing Questionnaire Items

Cox and Cox (2008) provided several guidelines to improve the clarity and readiness of the questionnaire items. Key recommendations included imitating the time taken to complete the form to no longer than 10-12 minutes, reducing the number of open-ended questions in the questionnaire as it is difficult to summarise and analyse, and grouping similar scaled items for clearer presentation and less confusion. The preliminary questionnaire was designed to take approximately 6 minutes to complete.

Converse and Presser (1986) suggested that when designing the preliminary questionnaire, researchers should examine how people react to it by consulting academic experts and members of the target population. Relying solely on input from those who share similar perspectives could introduce bias (Converse & Presser, 1986). Willis (2004) also revealed that several resources exist for minimizing miscommunications, and response errors: texts on psychometrics, questionnaire design textbooks and checklist systems. In conclusion, questionnaire evaluation from these individuals can enrich the researcher's perspective and the quality of the questionnaire (Willis, 2004).

3.2 Question Appraisal System

The Question Appraisal System (QAS-99) is a coding tool designed for pretesting instruments to identify and rectify issues that may lead to response errors (Dean et al., 2007). The QAS-99 comprises eight steps with 27 problems, each focusing on specific question characteristics that could hinder accurate responses, including the instruction presence and complexity, and implicit assumptions in the question's readability. Within each step, specific problems are identified, and if present, the corresponding 'Yes' box is checked. The outcomes of this appraisal inform revision to question wordings, response options, questionnaire format and question order, thereby enhancing the instrument's overall quality and effectiveness. Although the QAS-99 was initially designed for reviewing telephone interviews, it can also be applied to self-administered questionnaires, except for Step 1, which pertains specifically to interviewer-administered formats. See Table 3.1 for an overview of the eight steps of QAS-99.

Table 3.1

The Eight Steps of QAS-99

Step	Description
STEP 1 – READING	Determine if it is difficult for the interviewers to read the question uniformly to all respondents.
STEP 2 – INSTRUCTIONS	Look for problems with any introductions, instructions, or explanations from the respondent's point of view.
STEP 3 – CLARITY	Identify problems related to communicating the intent or meaning of the question to the respondent.
STEP 4 – ASSUMPTIONS	Determine whether there are problems with the assumptions made or the underlying logic.
STEP 5 – KNOWLEDGE/MEMORY	Check whether respondents are likely to not know or have trouble remembering information.
STEP 6 – SENSITIVITY/BIAS	Assess questions for sensitive nature or wording, and for bias.
STEP 7 – RESPONSE CATEGORIES	Assess the adequacy of the range of responses to be recorded.
STEP 8 – OTHER PROBLEMS	Look for problems not identified in Steps 1-7.

3.3 Aims of Study

This study engaged experts in inclusive and specialised education, along with professional general education teachers, to evaluate and refine the preliminary questions of a self-constructed instrument based on Ajzen's TPB model. The primary objective was to identify and understand the problems or strengths addressed by the QAS-99 Steps 2 to 8 with 24 problems on the initial version of the 'Teacher intention toward the use of evidence-based practices" (TIUE) and to refine it accordingly. See Figure 3.1 for the visual representation of the study's aim.

Figure 3.1
Visual Representation of the Study's aim

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Note. Adapted from "Checklist to Evaluate the Quality of Questions" (p. 1-2), by Alberta Mentors Hub, 2022, retrieved from https://hub.albertamentors.ca/wp-content/uploads/2022/11/CDC-Eval-Briefs-Question-Quality.pdf. Copyright 2022 by Alberta Mentors Hub.

3.4 Research Questions

This study investigated the factors that influence general education teachers' use of EBPs when teaching students with Autism in Australia. Specifically, it aimed to develop and refine an instrument to address the following research questions:

1. What potential problems and strengths were identified in the draft TIUE through alignment check and self-assessment?
2. What potential problems and strengths, as well as suggestions for improvement, were identified by the expert group in the draft TIUE?
3. What potential problems and strengths, as well as suggestions for improvement, were identified by the professional educators in the draft TIUE?

3.5 Hypotheses

These hypotheses had been linked to the 24 problem statements of the Question Appraisal System:

1. The draft TIUE was expected to exhibit alignment issues with the intended construct, as determined through the alignment check and self-assessment process.
2. Experts were anticipated to identify specific problems and provide suggestions for improvements within the draft TIUE.
3. Professional educators were anticipated to identify distinct issues and offer opinions on the necessary refinements within the draft TIUE.

CHAPTER 4: METHODOLOGY

This chapter outlines the methodological choices made to effectively address the research questions identified in the previous chapter. It begins by outlining the pragmatic philosophical paradigm that underpins the study, facilitating the integration of quantitative and qualitative methods. A convergent mixed methods design was adopted, involving the simultaneous collection of quantitative and qualitative data through online surveys. These data were analysed separately and subsequently merged to provide a comprehensive understanding of the research problem. This approach ensures that the chosen methods aligned with the study objectives and were practical for effectively answering the research questions.

4.1 Philosophical Paradigm

This research adopted a pragmatist paradigm, providing the philosophical foundation for this study's ontological, epistemological and methodological decisions made in this study (Mayan, 2023). Pragmatism acknowledges a single reality interpreted differently by individuals (Morgan, 2007) and aligns with the practical focus of assessing the effectiveness of the questionnaire. Epistemologically, it views knowledge as practical and community-focused, supporting the mixed methods to address research questions comprehensively (Mayan, 2023). Pragmatism's axiology accepts both value-free and value-laden positions (Mertens, 2015), generating different perspectives "in the pursuit of desired ends"(Morgan, 2007, p. 69). Thus, this research aimed for objectivity while also acknowledging the potential benefits of producing knowledge that positively impacts individuals and communities.

Pragmatism supports mixed-methods research by bridging constructivism and positivism, enabling a more flexible approach that integrates the strengths of both qualitative and quantitative research (Gillespie A., 2024; Johnson, 2017; Yardley & Bishop, 2017). It provides mixed-methods research with a versatile framework that integrates realist concerns about efficacy with constructionist concerns about social justice (Morgan, 2014).

4.2 Ethics

This study met the criteria for low-risk research as it was not involved with children or highly sensitive topics. To ensure adherence to fundamental research principles, including respect for individuals, justice, and beneficence, ethics approval was obtained from the Human Research Ethics Low-Risk Panel at Flinders University before commencing (Creswell, 2018; Flinders University, 2023, p. 22). See Appendix D for the letter of ethical approval. A participant information statement and a link to the Qualtrics (showing the QAS-99 coding form with TIUE items) were sent through an introductory email. See Appendix E for the introductory email. Participants were asked to give their digital consent. Upon clicking the 'agree' button to participate in this study, participants were directed to the form. The research purpose, potential risks and benefits, confidentiality, withdrawal rights, and anonymity were outlined in the information sheet (National Health and Medical Research Council, 2018). Participants could print or save a copy of the consent information for their records.

4.3 Methods

To address the research questions, this study adopted a convergent mixed methods approach that integrates both quantitative and qualitative data collection and analysis. The research questions guiding this study were focused on understanding general education teachers' beliefs and intentions regarding the use of EBPs with students with Autism, TPB.

An online survey was used to collect quantitative data through structured questionnaire items designed to measure TPB constructs including attitudes, subjective norms, perceived behavioural control, and intentions. On the other hand, qualitative data were gathered using open-ended questions, allowing participants to share their experiences and perspectives in more detail. This mixed-methods approach allowed for measurable quantitative data and the contextual details provided by the qualitative data.

4.3.1 Online Survey

This study utilised the online survey platform Qualtrics to gather participant responses between August and October 2024. See Appendix F for the Qualtrics survey. Online surveys provide several advantages, including rapid dissemination via social media or email and efficient participant recruitment within a short timeframe (Ball, 2019). The TIUE items were transcribed and uploaded to Qualtrics for distribution via email. The platform's ability to export data in multiple formats and integrate with analytical software simplified the coding and data-cleaning processes

(Hoda, 2024). These features were important for this study, given the complexity of the evaluation process and the need to reference multiple documents.

4.3.2 Convergent Mixed Methods Research

This study adopted a convergent mixed methods design, combining quantitative and qualitative approaches to provide a more comprehensive understanding of the phenomenon (Creswell, 2018). A systematic checklist approach was used to "simultaneously collect both qualitative and quantitative data" (Creswell, 2018, p. 551). The evaluation of the TIUE was conducted through an alignment check and the Question Appraisal System checklist. This process involved the researcher, a panel of experts, and professional groups, to identify 27 potential issues (quantitative data) while also gathering expert insights (qualitative data).

Following data collection, the results were merged and compared, with an emphasis on explaining any observed discrepancies to refine the draft TIUE (Creswell, 2018). It was important to note that the findings were preliminary and subject to further validation. Figure 4.1 illustrates the convergent mixed methods design that was employed in this study.

Figure 4.1
Convergent Mixed Methods Design

Figure removed due to copyright restriction

Note. Adapted from "Educational Research: Planning, Conducting, and Evaluating Quantitative and Qualitative Research" (p. 552), by J. W. Creswell & T. C. Guetterman, 2019, Pearson. Copyright 2019 by Pearson.

4.4 Sampling

Considering the preliminary stage of this research and time constraints, a small sample (n = 7) size was initially recruited for this study, aligning with the recommendations of Willis (2004) who recommended 5-15 participants for the modest sampling size. In this study, a combination of purposeful sampling and snowball sampling methods was employed as they had the advantages of recruiting representative of the population I seek in this study and having more respondents (Creswell, 2018). Initial participants from the snowballing were asked to provide contact details to recommend individuals for sampling. A non-probabilistic sampling approach was used, where participants were recruited through the researcher's personal contacts and social networks who met the research inclusion criteria.

The study was mainly conducted via email, the online survey platform Qualtrics for collecting data, and analysing data at Flinders University in SA. Respondents completed the online questionnaire at their preferred location (e.g., home, workplace, restaurant), which took between 30 to 90 minutes, depending on the level of detail in their feedback.

4.4.1 Procedure

1. The researcher conducted an alignment check and self-assessment of the TIUE questionnaire using the QAS-99 checklist to ensure its suitability.
2. Subsequently, each participant received a link to the Qualtrics survey, which included the QAS-99 coding form alongside the TIUE items, as well as the QAS-99 manual for reference.
3. The questionnaire was distributed to expert and professional groups for evaluation and feedback on question construction, again employing the QAS-99 checklist to assess the quality and clarity of the items.
4. The feedback collected from these experts was then systematically analysed to identify areas requiring refinement.
5. Based on this analysis, all the gathered data was summarised and presented in the final report.

4.4.2 Inclusion and Exclusion Criteria

This study recruited 7 participants, with 2 presenting incomplete or invalid data, targeting individuals “with expertise in the construct being developed, people familiar with the target population on whom the instrument will be used, users of the instrument, data analysts were recommended as experts” (Elangovan & Sundaravel, 2021, p. 5). See table 4.1 for the participant selection criteria for this study.

Table 4.1

Participant Selection Criteria in the Study

Participant Group	Inclusion Criteria	Exclusion Criteria
All groups	- All nationalities - Currently employed in education in South Australia - Able to read and write in English - Fulfill these criteria and be willing to participate and receive invitations to join the study.	- Decline invitation to participate - Individuals who are unable to read and write in English.
Expert group	- At least one expert with knowledge and experience in inclusive and specialised education (e.g., Inclusive coordinator, people with inclusive and specialised education qualifications). - At least one expert with knowledge and experience in educational research (e.g., Lecturer teaching educational research). - At least one expert with knowledge and experience in Autism education/ teaching (e.g., Lecturer specialising in Autism teaching, healthcare professionals with experience teaching students with Autism).	
Professional group	- At least two qualified, primary general education teachers in South Australia without special education qualifications and engaged in teaching students aged 6 to 12 with Autism.	

4.5 Expert Group Review

A panel of three experts evaluated the TIUE questionnaire, which consists of Parts 1 to 3 and contains 17 items. The panel included two individuals with qualifications in inclusive and specialised education and/or in-depth expertise in Autism education and 1 individual with knowledge and experience in educational research, survey, and questionnaire design. The evaluation aimed to assess the quality and appropriateness of the TIUE questionnaire. The experts assessed various question characteristics, such as identifying complicated instructions (Step 2b), and inappropriate assumptions made (Step 4a) as outlined by Willis and Lessler (1999). Additionally, they reviewed the flow, organisation, and instructions of the questionnaire, and

identified any technical issues that could hinder the completion process (Cox & Cox, 2008; Sue & Ritter, 2007).

4.6 Professional Group Review

Following the expert evaluation, a review was conducted by two teachers who also worked in the mainstream educational system. They assessed the remaining 16 items across Parts 1 to 3 of the TIUE questionnaire. The teachers reviewed the questionnaire from a professional perspective, offering their opinions on the appropriateness of the dimensions and individual items. Additionally, they provided insights into aspects that were overlooked by the expert panel (Coronado et al., 2022).

4.7 Descriptive Data of Participants' Demographic Information

Table 4.2
Summary of Key Demographic Variables

Category	Details	Percentage
Total Participants	5	100%
Participant Groups		
- Expert Group	3	60%
- Professional Group	2	40%
Educational Background		
- Bachelor	2	40%
- Master	2	40%
- PhD	1	20%
Job Titles		
- Primary Teacher	2	40%
- Student Support Officer	1	20%
- Bilingual School Officer	1	20%
- Senior Lecturer	1	20%

4.8 Data Collection

4.8.1 Evaluation Measure

The TIUE was a 33-item questionnaire developed and evaluated for the current study. It was organised into three sections: Part 1 consisted of 9 screening questions, Part 2 contained 15 questions based on the TPB model, and Part 3 included 9 demographic questions. The questionnaire employed a 7-point rating scale, following the example from Fishbein and Ajzen (2010). A 7-point semantic differential scale was used to measure attitudes (4 items). These items utilised opposing adjective pairs positioned on seven-point scales: *bad-good, worthless-valuable, unpleasant-pleasant, boring-interesting*. Additionally, a 7-point Likert scale was employed to measure SN (4 items), PBC (4 items) and IN (3 items). It was crucial to note that the TIUE was developed for evaluation purposes within the context of this research and was not utilised to collect data at this stage. See Appendix B for the sample questionnaire TIUE.

The QAS-99 was used by the evaluation group to uncover issues with questions before testing that might have affected measurement error and response accuracy (Willis & Lessler, 1999). QAS-99 encompassed a range of common errors that should have been avoided when writing survey questions. It could be evaluated in self-administrated paper or computerised questionnaires. This system evaluated each question across 27 problem areas under eight heads. Some of these error types pertained to question clarity (e.g., Step 3a WORDING - Identified whether the question was lengthy or ungrammatical; Step 3c VAGUE - Identified whether there were multiple ways to interpret the question.). Also, some errors type dealt with response categories (e.g., Step 7b MISMATCH - Identified whether there was a mismatch between question and response categories; Step 7c TECHNICAL TERMS - Identified whether there were terms that were undefined or complex). Experts and professional educators were invited to download it for their reference during the evaluation process. The QAS-99 coding manual provided examples and detailed explanations of each problem type in detail (Willis & Lessler, 1999, pp. 3-1 to 3-36). See Appendix C for the QAS-99 manual and coding form.

4.8.2 Self-Assessment

An alignment check was conducted by cross-referencing the proposed aims of the research with the questionnaire items to determine whether they adequately addressed the guiding question (i.e., ‘What are the general educators’ intentions to use current evidence-based practices (EBPs) in instructing students with Autism? What are the general educators’ attitudes, subjective norms (SN), and perceived behavioural control (PBC) towards using these EBPs?’). Furthermore, the pilot questionnaire was self-assessed using the QAS-99 checklist before being reviewed by experts and

professional groups to identify and address poorly written items, omissions and superfluous content (Cox & Cox, 2008; Willis & Lessler, 1999). Subsequently, the checked TIUE items were compiled into the QAS-99 coding form through the online survey platform, Qualtrics.

After completing the self-assessment, Step 1 of the QAS-99 (e.g., Step 1a WHAT TO READ - Assessed whether the question was clearly delineated for respondents without the need for an interviewer; Step 1b MISSING INFORMATION - Evaluated whether all necessary information for independently answering the question was provided; Step 1c HOW TO READ - Determined if the question was fully scripted to prevent ambiguity in an online format.) was removed. Since this research was conducted in an online context without an interviewer, these elements were deemed unnecessary for subsequent evaluations. Instead, similar criteria were incorporated into Step 2 of the assessment process to ensure that each question was clear, complete, and easy for respondents to understand independently, focusing on their comprehension and the suitability of the questions.

4.8.3 Evaluation Process

To enhance the efficiency of the evaluation process and minimise the time and effort required from respondents, the TIUE questionnaire, consisting of 33 items, was divided into two sections on a rotating basis. Both expert and professional groups were assigned to evaluate three different sections using the QAS-99 coding form, with an estimated time of 67 minutes per group. Table 4.3 presents the distribution of TIUE questionnaire item evaluations. This approach ensured that each participant reviewed only a portion of the questionnaire, thereby effectively distributing the workload.

Table 4.3

Distribution of TIUE Questionnaire Item Evaluations

TIUE Sections	Expert Group	Professional Teacher Group
Part 1: Screening Questions	4 items (~20 minutes)	5 items (~20 minutes)
Part 2: TPB Questions	8 items (~37 minutes)	7 items (~37 minutes)
Part 3: Demographic Questions	5 items (~10 minutes)	4 items (~10 minutes)
Total Evaluation Questions	17 items	16 items
Estimated Time Required	~67 minutes	~67 minutes

Note. TIUE refers to the questionnaire being evaluated. TPB Questions relate to the Theory of Planned Behaviour section in the questionnaire. The estimated times are approximate and indicate the total time taken by each group to evaluate their respective items.

4.8.4 Quantitative Data Collection

Experts and professional educators were asked to identify any potential problems in the TIUE using the QAS-99 appraisal system. They were instructed to code 'Yes' if they identified problems from Step 1 to Step 7. The total number of 'Yes' responses was subsequently analysed to quantify the identified issues.

4.8.5 Qualitative Data Collection

Experts and professional educators were also asked to provide detailed notes describing the problems for each item coded as 'Yes' responses. These notes were documented and analysed as qualitative data to gain a deeper understanding of the specific problems identified.

4.9 Pilot Data Analysis

Since evaluation research involved collecting quantitative and qualitative data, distinct analytical approaches were applied to each type. This section outlines the procedures used to analyse both data. This study employs a directed content analysis approach, which utilises a top-down methodology based on a predetermined set of codes (Hsieh & Shannon, 2005). The use of a systematic appraisal checklist with these predefined codes ensures consistency in our research. The quantitative data consisted of responses to the close-ended (YES/NO) questions from the QAS-99, which were analysed using Microsoft Excel. In contrast, the qualitative data comprised open-ended comments from the QAS-99 and were manually analysed using Microsoft Excel and Word. The data analysis followed three distinct stages to ensure a systematic and thorough examination of the dataset (Elo & Kyngäs, 2008).

4.9.1 Data Preparation

The primary stage focused on familiarising with the data and performing data cleaning steps to reduce missing values and data errors. These procedures involved either removing participants with incomplete responses or replacing missing data with appropriate values to ensure the data integrity before further analysis.

4.9.2 Data Organising

The next stage focused on coding the data using predefined codes. Data points that did not fit the original coding scheme were identified and assessed for potential classification into new categories. This data organisation provided a structured foundation for subsequent analysis.

4.9.3 Reporting

In the final stage, a detailed analysis and presentation of the findings were carried out. This involved summarising common themes from qualitative comments, including frequency and percentage distributions. Throughout the process, key comments were identified to identify areas for improvement in the questionnaire. The frequencies of codes relating to the seven primary categories were documented, along with any newly identified codes in the 'other' categories of the QAS-99. Furthermore, the percentage distribution of codes for each respondent was reported to provide a comparative overview of the data.

Lastly, common themes or issues that emerged from the reviews guided the refinement or revision of the draft TIUE questionnaire. Throughout the stages of questionnaire development, valuable qualitative comments and the identified construction problems (i.e., the question items coded with ‘Yes’ in the QAS-99) were received from various participants to help refine the questionnaire and enhance its validity and reliability. The items were designed to ensure they referred to a single concept, avoiding double negation and ambiguity, and using a first-person format (Coronado et al., 2022). The dissertation concluded with a discussion of common themes and issues that emerged, describing how these insights contributed to the questionnaire's revision.

Figure 4.2
The Process of Deductive Content Analysis

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Note. Adapted from "The Qualitative Content Analysis Process," by S. Elo and H. Kyngäs, 2008, Journal of Advanced Nursing, 62(1), p. 110, in International Students' Learning Patterns and Their Academic Adaptation in British Higher Education, by S. Lee, 2018, Unpublished MPhil thesis, University of Cambridge. Copyright 2008 by John Wiley & Sons.

CHAPTER 5: RESULTS

This section provides a breakdown of feedback provided by expert and educator evaluators based on their insights using the QAS-99 rubric. The primary purpose of this paper is to understand the perspectives of a range of stakeholders regarding strengths, problems, and suggestions for improvements, which were identified in the draft TIUE, as reported by the self, expert group, and professional educators' group. Please see Table 5.1 for a brief summary of the research result.

5.1 Self-Assessment Evaluation

5.1.1 Alignment Check

An alignment check was conducted by cross-referencing the proposed research aims with the questionnaire items to ensure coherence. The evaluation confirmed that 94% (32/34 question items) (Table H1 to H3) of the questionnaire items were appropriately designed to address the guiding research question: What are general educators' intentions to implement current evidence-based practices (EBPs) in teaching students with ASD?

Six per cent (2/34 question items) were found to be misaligned with the guiding questions, leaving it to the evaluators to determine their relevance. The first of these is Question 3.2: What is your gender? Although this question does not directly pertain to the specific role of a general educator, it was included to explore potential insights into the relationship between gender differences and educators' attitudes. Further justification for the inclusion of this question will be discussed in the discussion section. The second is the open-ended question at the end of the questionnaire, which, although not directly aligned, may allow respondents to provide additional information that could contribute valuable insights. Overall, the remaining questionnaire items effectively captured the key constructs, including educators' attitudes, subjective norms (SN), and perceived behavioural control (PBC) toward using EBPs. See Appendix G for the detailed results from the alignment check of the TIUE, covering Parts 1 to 3.

.

5.1.2 Self-Assessment

The TIUE questionnaire demonstrated notable strengths, with 205 out of 230 evaluation questions (89%) being free from identified issues in the self-assessment section. This high percentage indicates that most of the questions were clear, relevant, and effectively designed to gather accurate responses. These strengths reflect the robustness of the questionnaire's structure and

its ability to cover key areas without confusing respondents. However, the author identified 25 issues with the first draft of the TIUE questionnaire across its three sections, focusing on clarity, relevance, and usability. These issues were categorised by type and frequency to guide improvements. See Appendix H for the problems identified in the self-assessment.

Part 1: Screening Questions identified fourteen issues, including ungrammatical wording, vague phrasing, undefined terms, and overlapping response categories. Question 1.1 had multiple issues, such as unclear role descriptions, assumptions about respondents, and non-exclusive categories. Formatting inconsistencies across all questions were also noted, with suggestions to adjust word alignment and image size.

Part 2: TPB Questions identified five problems, including complicated instructions (Questions 2.9 and 2.12) and recall difficulties (Question 2.10). Recommendations included using colour to highlight instructions and providing EBPs lists to assist respondents. Undefined terms also required placing definitions near relevant questions.

Part 3: Demographic Questions revealed six issues, mainly related to clarity. Question 3.5 needed rephrasing to correct grammar, and Question 3.8 required clearer phrasing and reference periods. Questions 3.5.1 and 3.7 also lacked reference periods, while Question 3.7 needed an 'Other' option to address overlapping grades.

In summary, the analysis of the TIUE questionnaire in Parts 1, 2, and 3 revealed key areas for improvement in clarity, instructions, and question design. Issues like ungrammatical wording, vague phrasing, undefined terms, and incorrect assumptions were addressed with specific suggestions to enhance respondent understanding and data accuracy. Implementing these changes will improve the reliability of the questionnaire and ensure it effectively captures the intended data, aligning with the research objectives.

5.2 Expert Group Result

The expert group identified notable strengths in the TIUE questionnaire, with 69 out of 112 evaluation questions (62%) being free of identified issues. This indicates that a significant portion of the questionnaire was well-designed and effective in eliciting clear, relevant responses. However, three respondents from the expert group identified a total of 43 key issues across the TIUE questionnaire. One expert provided her feedback in Word format, with open responses that were not categorised by problem type. Her responses were later organised by problem category and question sequence and quoted verbatim. See Appendix I for the problems identified in the expert group.

In Part 1: Screening Questions, the group identified seven clarity problems, including undefined technical terms, vague or lengthy wording, and the need for clearer instructions. Experts

recommended simplifying the language, defining terms like ‘general teacher’ and ‘special education teacher’, and rephrasing complex questions for better respondent comprehension.

In Part 2: TPB Questions, the majority of issues (13 comments) were related to conflicting or incomplete instructions. Experts suggested providing more detailed instructions and examples to guide respondents. Additionally, two inappropriate assumptions about respondents' knowledge—particularly regarding Autism and teaching environments—were noted, with recommendations to use more inclusive phrasing.

Part 3: Demographic Questions raised concerns related to age and gender, with experts identifying three sensitive issues. They recommended using broader categories, such as age ranges, or allowing respondents the option to opt out of providing personal information.

Finally, one expert with expertise in the TPB model provided specialised insights on TPB-related questions and scaling methods. This expert recommended switching to more appropriate scaling methods, such as Likert or Thurstone scales, and increasing the number of items for measuring intent to ensure more accurate data collection. A more detailed explanation of these suggestions will be provided in the discussion section.

5.3 Professional Teacher Group Result

The professional teacher group highlighted significant strengths in the TIUE questionnaire, with 106 out of 118 evaluation questions (89%) found to be free of issues. This high percentage reflects the effectiveness of the majority of the questionnaire items. However, the professional teacher group, consisting of two primary teachers, identified 12 potential issues in the first draft of the proposed TIUE questionnaire. Clarity problems were the most frequent across Parts 1, 2, and 3 See Appendix J for the problems identified in the professional teacher group.

In Part 1: Screening Questions, the group highlighted problems with lengthy and ungrammatical wording, recommending revisions to improve phrasing and grammar (e.g., adding an article to ‘story-based intervention’).

Part 2: TPB Questions included six clarity issues, such as awkward phrasing and inconsistent tense usage, with suggestions to simplify wording and ensure grammatical consistency.

Part 3: Demographic Questions revealed issues with inaccurate instructions and ungrammatical wording, with specific recommendations to clarify training-related questions and adding instructions to include ‘reception class’ for six-year-old students.

Table 5.1
Brief summary of the research result

Result	Description	See Appendix for details
SELF-ALIGNMENT CHECK	94% (32/34) of items aligned to the guiding research question	Appendix G
SELF-ASSESSMENT	89% (205/ 230) of items free from issue	Appendix H
EXPERT GROUP REVIEW	62% (69/ 112) of items free from issue	Appendix I
TEACHER GROUP REVIEW	89% (106 /118) of items free from issue	Appendix J
QUALITATIVE COMMENTS	Improve clarity, inclusivity, and effectiveness	Appendix H, I & J
FINAL TIUE QUESTIONNAIRE	Total Changes Made: 24 Total Number of Questions: 33 distinct questions	Appendix K

CHAPTER 6: DISCUSSION

In this chapter, the findings of the study will be discussed with the existing literature. The results obtained from the evaluation groups highlighted several key themes requiring further exploration: the characteristics and differences between general and special education teachers, the efficacy of scaling methods, gender expression and inclusivity, and the influence of school culture. These themes provided a foundation for understanding the factors influencing the use and adoption of EBPs in educational settings. The analysis of these findings also tied back to the overarching aim of the research by evaluating and refining the draft TIUE questionnaire. Accordingly, the study evaluated through alignment checks, self-assessments, and obtained feedback from expert groups and professional educators, investigated the potential problems, strengths, and suggestions for improvement.

6.1 Perspectives on Questionnaire Design

Expert Group

Expert review can be conducted either individually or in groups by people with methodological expertise or subject matter expertise (Maitland et al., 2020). It was suggested that expert reviews offered the most reliable predictions in the study (Maitland & Presser, 2018). Specifically, the expert review in this study was conducted individually. The expert group offered detailed suggestions on aspects like scaling methods, the number of questions, and wording in instructions and introductions based on their background in educational research and questionnaire development. This group’s extensive experience allowed them to identify these technical aspects, which helped to improve the questionnaire's accuracy, and reliability, and identify large issues in the early questionnaire design process before extensive development (Willis, 2004). Additionally, their familiarity with inclusive and specialised education empowered them to emphasise the importance of clarifying sensitive content and avoiding assumptions about respondents' level of knowledge. The expert group also emphasised the necessity of addressing distinctions between general and special education. Thus, they suggested explicit definitions to avoid ambiguity and ensure that respondents could engage with the questionnaire effectively regardless of their background knowledge. This valuable feedback brought attention to reflect that respondents may have varying familiarity levels with technical terms in the inclusive education context, which could affect the validity of the collected data.

Professional Teacher Group

On the contrary, the professional teacher group focused primarily on the clarity of instructions. Their practical approach by recommending rephrasing certain instructions and simplifying language enhanced the questionnaire to be more accessible to all potential respondents. Additionally, they proposed expanding the questionnaire to include more year levels, drawing on their practical experience in primary education. Their insights into the varied academic needs of students, particularly in foundation years, reflected an understanding of the educational context in which the questionnaire was to be used, ensuring it aligned with real classroom dynamics.

6.2 Discussion of Findings

6.2.1 Characteristics between General and Special Education Teachers

General and special education teachers had distinct roles and responsibilities in the education system. General education teachers delivered a standardised curriculum to a broad group of students with the use of structured resources like textbooks and pacing guides to ensure alignment with standards. Their classrooms might have included students with special needs, but their primary focus was on the general student population (Youngs et al., 2011). On the contrary, special education teachers mainly worked with students who require specialised support or those with disabilities. They were responsible for adapting curricula or teaching methods to meet the individual needs of their students, often developing IEPs to ensure compliance with legal requirements like the Disability Standards for Education 2005 (DSE). This role demanded a high level of flexibility, with special education teachers demonstrating and navigating ambiguous curricular expectations with limited instructional resources (Stempien & Loeb, 2002; Youngs et al., 2011). Furthermore, general education teachers often benefited from collaborative work environments, whereas special education teachers might have experienced professional isolation due to their unique and complex nature of roles (Stempien & Loeb, 2002).

6.2.2 Scaling Methods

One expert who had previous experience specialising in the TPB model, provided comprehensive feedback on the scaling methods used in the questionnaire. The expert commented on the instructional and demonstration aspects of the TIUE Part 2 TPB questions, revealing that the seven-point rating scale used in the instruction was a semantic differential scale (Krosnick et al., 2019). Yet, this scale did not align with the one employed in the subsequent TIUE questionnaire, which was more like a Likert scale. The expert suggested aligning with the rating scale used in the TIUE questionnaire. See below figure 6.1 for an example of the Likert scale and semantic

differential scale. Upon reviewing the relevant literature, Krosnick et al. (2019) illustrated that although the semantic differential scale was straightforward and easy to administer, many studies did not strictly follow the procedures outlined by Osgood (1957). For example, the horizontal line presented for the semantic differential scale should have been labelled at all points and the endpoints, and these endpoints should have been labelled extremely (‘extremely good’ instead of ‘good’, and ‘extremely bad’ instead of ‘bad’).

Figure 6.1

Example of Item Transformation from a Likert to a Semantic Differential Format

Examples of item transformations from a Likert to a semantic differential format

		Not true at all						Very true	
Likert format									
I feel that my future looks promising		1	2	3	4	5	6	7	
It is easy for me to think of good conversational topics		1	2	3	4	5	6	7	
Semantic differential format									
I feel that my future looks	*uncertain*	1	2	3	4	5	6	7	*promising*
To think of good conversational topics is	*easy for me*	1	2	3	4	5	6	7	*difficult for me*

Note. Adapted from "Likert-based vs. semantic differential-based scorings of positive psychological constructs: A psychometric comparison of two versions of a scale measuring resilience" (p. 875), by O. Friborg, M. Martinussen, and J. H. Rosenvinge, 2006, Personality and Individual Differences, 40(5), 873–884. Copyright 2006 by Elsevier Ltd.

The expert recommended exploring alternative scaling methods, such as the Likert or Thurstone scales, which might be more appropriate for this research. This suggestion was supported by key studies, which highlighted the benefits of these scales in enhancing measurement accuracy for surveys focused on attitudes and intentions (Krosnick et al., 2019). In addition, Likert (1932) and Thurstone (1928) confirmed that they offered greater precision in assessing respondents' attitudes and behaviours than the semantic differential scale used in the current study. Critically, the Likert scale was advantageous due to its ease of preparation and use, and it was more familiar to respondents, increasing respondents’ interpretation (Soukup, 2013). Furthermore, they reduced the likelihood of random measurement error when using multiple items (Allison, 1976). This approach also ensured consistent interpretations across respondents, supporting the correlational validity of the instrument. See below Table 6.1 for the comparative table incorporative pros and cons of the Likert scale and semantic differential scale.

Table 6.1
Pros and Cons of Likert Scale and Semantic Differential Scale

Aspect	Likert Scale	Semantic Differential Scale
Ease of Use	*Pros:* Familiar to respondents; easy to construct. *Cons:* May not capture nuanced attitudes (Fishman et al., 2021).	*Pros:* Captures multidimensional attitudes (Francis, 2004). *Cons:* Requires careful selection of adjectives (Ofir et al., 1987).
Reliability	*Pros:* Demonstrated reliability in educational settings (Shrestha et al., 2022). *Cons:* Less sensitive to subtle differences (Friborg et al., 2006).	*Pros:* High construct validity and sensitivity (Friborg et al., 2006). *Cons:* Reliability depends on cultural appropriateness (Soukup, 2013).
Validity	*Pros:* Valid for measuring intentions and norms. *Cons:* May not fully capture the evaluative dimension of attitudes (Fishman et al., 2021).	*Pros:* Great for capturing the evaluative aspects of attitudes (Francis, 2004). *Cons:* Validity affected by adjective selection (Ofir et al., 1987).
Respondent Interpretation	*Pros:* Generally straightforward. *Cons:* Interpretation may vary culturally (Soukup, 2013).	*Pros:* Encourages deeper reflection on attitudes. *Cons:* Requires understanding of bipolar adjectives (Soukup, 2013).
Suitability for Measuring Attitudes and Intentions	*Pros:* Effective for intentions and perceived control (Shrestha et al., 2022). *Cons:* Less effective for complex attitudes (Fishman et al., 2021).	*Pros:* Well-suited for complex attitude measurement (Francis, 2004). *Cons:* Could be complex for some respondents (Ofir et al., 1987).

The original author did not provide a rationale for using the semantic differential scale in the sample questionnaire (Fishbein & Ajzen, 2010). Yet, based on a review of relevant literature

applying the TPB model, the Likert scale was found to be commonly employed in similar studies (Andarge et al., 2020; Demir, 2010; Finke et al., 2015; Lenski et al., 2019; Stanec, 2009). It was also commonly applied in research related to Autism education (Garrad et al., 2021; Ruble et al., 2018). Therefore, the revised TIUE instrument adopted the Likert scale for consistency and alignment with established practices.

Furthermore, Krosnick et al. (2019) discussed the advantages and disadvantages of including a midpoint (neutral/no preference) on a scale. While offering a midpoint might have encouraged respondents to select it as a convenient option, leading to satisficing (a tendency to choose an easier option without full consideration), it also provided a way for participants to genuinely express neutrality (Francis, 2004; Soukup, 2013). Conversely, when the midpoint was removed, genuinely neutral respondents might have been forced to select a positive or negative option, potentially leading to an inaccurate representation of their true attitudes (Friborg et al., 2006).

Overall, the literature underscored the capacity of Likert and Thurstone scales to provide more reliable and valid results by capturing a broader range of opinions and intentions. Therefore, these alternative scales were recommended for the final version of the questionnaire.

6.2.3 TPB Items

One expert advised against using only three measuring items for intention, citing relevant literature. Bentler and Chou (1987) indicated that varying the number of latent variables could lead to identification errors, particularly in models with only two indicators, which often encountered difficulties. To address this issue, it was recommended to ensure that factors have effects on three or more indicators. Therefore, the author added one more measuring item for intention and adopted the suggestion from the expert.

Consequently, the author adopted the scaling methods of the Likert scale as supported by other similar studies (Andarge et al., 2020; Demir, 2010; Finke et al., 2015; Lenski et al., 2019; Stanec, 2009) with seven points and offered a midpoint with a ‘neutral/ neither’ response to improve the reliability of responses in assessing teacher intentions.

6.2.4 School Culture

A respondent in the expert review group noted that the school teaching environment and culture are complex, suggesting that the use of identified EBPs in teaching is not solely determined by a teacher's personal decision. Williams et al. (2021) supported this perspective, explaining that school culture and personal value judgment could significantly influence decisions to adopt an EBP. Similarly, Hammad (2010) identified cultural factors within schools that hinder the development of

shared decision-making (SDM) practices. These include unwillingness to engage, lack of trust, unfamiliarity with SDM, concerns about involvement, and prioritising seniority in decision-making. These factors could create a misalignment between student needs, teacher values and school priorities, thus challenging the democratic and collaborative principles of SDM (Hanley, 2010).

Brezicha et al. (2020) emphasised that SDM was a critical aspect of school culture, with principals playing a key role in encouraging and empowering teachers to participate meaningfully in school-wide decisions. However, there was often a gap between how principals and teachers perceive the level of teacher involvement in decision-making (Williams et al., 2021). For SDM to be effective, teachers needed meaningful opportunities to participate while principals needed to view delegating decision-making authority as an essential part of their role (Weiss & Cambone, 1994). When teachers felt their participation was superficial due to a lack of genuine opportunities, it was not abiding by the principles of SDM. Such disconnection between teachers' and principals' perspectives could lead to feelings of tokenism, disengagement, and a negative school culture. Moreover, broader influences, such as national cultural norms and policy or regulatory frameworks, also influenced decision-making processes within a school Torres, 2022).

To address these challenges, future research should explore how school management and teachers can align to create school environments that support positive outcomes for students. Although the current study focuses on teachers' intentions to use EBPs, consideration of school culture could inform the questionnaire by addressing elements like teachers' perceived autonomy and organisational support to reflect the broader contextual factors influencing teacher intentions.

6.2.5 Gender Expression and Inclusivity

One expert recommended reevaluating the necessity of asking 'What is your gender?' in the demographic section, noting that some respondents may find this question sensitive. Furthermore, it did not align well with the guiding questions of the current research. Studies indicate that educators' gender could be a significant personal factor, influencing their perceptions of planned behaviour and contributing to pedagogical differences that affected boys' and girls' behaviours (Bosacki et al., 2015; Grigoropoulos, 2022; Huber & Traxl, 2018). Consequently, while retaining this question in the TIUE screening was advisable, the author incorporated the expert's suggestions to be more inclusive and take reference from other research in gender questions (Patte et al., 2024; Wild et al., 2023). Gender question options included male, female, prefer not to say and prefer to self-describe.

6.3 Summary of Proposed Changes to the TIUE Questionnaire

A total of 24 changes were proposed across 33 questions to enhance clarity, inclusivity, and effectiveness. The changes were summarised as follows: Part 1 Screening Questions with changes made to 5 out of 9 questions; Part 2 TPB Questions with changes made to 14 out of 15 questions; and Part 3 Demographic Questions with changes made to 5 out of 9 questions. Table 6.2 provides a concise summary of the suggested questionnaire changes identified through self-assessment, expert review, and teacher feedback. See Appendix K for the full list of suggested questionnaire changes.

Table 6.2
Summary of Suggested Questionnaire Changes

Question	Issue Identified	Proposed Change	Source of Feedback
1.1	Ungrammatical wording	Rephrased question; defined terms; added "Other" option	Self-Assessment, Expert Review
1.1.1	Definitive language ("proven")	Rephrased introduction; added definitions; revised question	Expert Review
1.2	Lack of definitions; complicated instructions	Provided definitions; simplified instructions	Teacher Feedback
1.2 (6)	Vague definition of "Scripting"	Revised definition	Expert Review
1.2 (7)	Ungrammatical wording	Corrected grammar	Self-Assessment
2.1	Vague terms ("effort")	Clarified rating scale; defined "effort"	Teacher Feedback
2.2	Overlapping terms	Revised wording for measurability	Expert Review
2.4	Ambiguous phrasing	Used specific language to clarify autonomy	Self-Assessment
2.5	Vague term ("really want to")	Provided clear definition	Teacher Feedback
2.6	Assumptions about settings and control	Specified environment; clarified "complete control"	Expert Review
2.7	Complexity due to multiple terms	Focused on "knowledge" only	Self-Assessment

2.8 & 2.11	Vague references ("people who are important to me")	Used specific terms like "Colleagues"	Teacher Feedback
2.9 & 2.12	Clarity in wording	Revised phrases for clarity	Expert Review
2.10	Recall issues	Added list of EBPs as a memory aid	Self-Assessment
2.12	Tone and clarity	Changed wording from "bad/good" to "unhelpful/helpful"	Teacher Feedback
2.13	Sentence structure	Revised for clarity	Expert Review
2.14 & 2.15	Grammatical tense	Corrected to future tense ("would be")	Self-Assessment
3.1	Privacy concerns	Used age ranges instead of exact age	Teacher Feedback
3.2	Inclusivity in gender options	Added "Prefer not to say"	Expert Review
3.5	Grammatical error	Corrected wording; added reference period	Self-Assessment
3.7	Inaccurate options due to regional differences	Included "Foundation"; added "Other" option	Teacher Feedback
3.8	Ungrammatical wording	Rephrased question	Expert Review

6.4 Overall Evaluation of the Research

6.4.1 Significance of the Research

The significance of this research lay in its potential to measure teachers' intentions to use EBPs, which might, in turn, have provided insights into their knowledge, understanding, and planned use of EBPs for students with Autism. The instrument developed provided a foundation for understanding key factors affecting general teachers' use of EBPs, which could have led to more inclusive and effective teaching methods (Garrad et al., 2021; Sam et al., 2021). Insights gained from this study also served as a groundwork for refining the instrument, which could guide future research and support professional growth in inclusive educational settings. Ultimately, the findings had the potential to shape better educational experiences for students with Autism by equipping teachers with evidence-based practices and knowledge, enabling more effective teaching strategies (Tamara Marder & Laurie U. deBettencourt, 2015; Merle et al., 2023).

6.4.2 Limitations of the Research

Small sample size. This pilot study involved five participants, limiting the representativeness of the findings and their generalisability to the larger population (Creswell, 2018). To address this, qualitative comments were incorporated to provide context and depth that quantitative data alone could not capture, enhancing interpretive value.

Low Response Rate. The study experienced a low response rate, with only seven of over 20 invited participants expressing interest. This might have introduced non-response bias, as participants were more likely to provide extreme responses, either highly positive or negative, affecting the representativeness of the results (Creswell, 2018).

Time and Resource Constraints. Limited time and resources impacted the ability to collect comprehensive and in-depth data, potentially affecting the thoroughness of the analysis and interpretation (O'Leary, 2017).

Complexity of Instructions. Participants found the instructions complex, with several taking longer than the estimated 67 minutes to complete the task. One provided feedback using a Word document, while others misunderstood their roles as evaluators, mistaking themselves for respondents. This confusion likely reduced participation and compromised response quality.

Technological Limitations. Online surveys posed challenges for participants with low digital literacy or difficulty accessing supporting documents (Bernard, 2018). Several reported issues locating required files, leading to clarifying questions before starting. These barriers likely reduced engagement and data quality.

6.4.3 Delimitations of the Research

The scope of this study was clearly defined to ensure focus and manageability. It employed an online survey with closed-ended questions, enabling the collection of quantitative data but with limitations such as the need for statistical proficiency, difficulty in capturing nuanced responses, and challenges in follow-ups (O'Leary, 2017, p. 227).

Additionally, the study data collection occurred within a specific timeframe, which enhanced efficiency but restricted the potential for longitudinal analysis (Creswell, 2018; O'Leary, 2017). The study provided detailed insights into their practices and experiences by focusing on primary school teachers. However, this demographic focus limited the generalisability of findings to other contexts or teacher populations.

6.5 Future Research and Practical Implications

A key implication of this study is the importance of gaining evaluative feedback from various specialists. The TIUE questionnaire developed in this study serves as a valuable tool for researchers interested in exploring general education teachers' attitudes toward using evidence-based instruction for students with Autism. It provides a comprehensive instrument for measuring these attitudes, thereby addressing a significant gap in the literature on special education, particularly in Autism education within mainstream schools. Understanding general education teachers' attitudes can influence multiple levels within a school's organisational context. Improved beliefs and attitudes may foster a more supportive climate for implementing EBPs, ensuring consistent messaging, better time allocation for dissemination, and enhanced accountability. While this study did not involve the collection or analysis of data from the Teachers' Intentions and Use of Evidence-Based Practices (TIUE) questionnaire, future research should pilot the revised TIUE questionnaire with a larger group of general education teachers in South Australia. This could be followed by broader pilot studies to improve the instrument's reliability and validity.

Future research may require extended timeframes to thoroughly explore the complexities of general education teachers' attitudes toward EBPs for students with Autism. Longer study durations would allow for in-depth analysis, such as tracking changes in attitudes over different teacher characteristics (e.g., educational background, years of teaching experience, teaching year level), and evaluating the long-term impact of the professional development program. Critically, the importance of a measurement instrument's sensitivity is well-established in the literature (Terwee, 2014). Thus, this instrument is essential for evaluating its responsiveness to detect change over time, particularly in response to interventions in the future. Additionally, longitudinal studies could facilitate deeper insights into how to support and influence teacher attitudes when exposed to different EBPs in their classroom practices over time.

This study primarily focused on general educators' perceptions, without addressing other factors related to the school's organisational context. Based on expert feedback and prior research, future studies should carefully assess the organisational context at multiple levels, including individual teacher and administrator perspectives, as well as school- and district-level processes. The TIUE questionnaire could also be adapted to examine administrators' and district leaders' perceptions of using EBPs for teaching students with autism, offering a more comprehensive understanding of implementation across the broader educational system.

CHAPTER 7: CONCLUSION

This is the first study to evaluate a questionnaire based on the TPB model in understanding general education teachers' intention to use identified EBPs when teaching students with Autism. The primary objective of this research was to develop, evaluate, and refine a pilot questionnaire based on the TPB. This study has developed, evaluated and identified potential problems through alignment checks, self-assessment, and review by experts and professional groups. The research has identified its strengths and overcome some limitations. A detailed summary of changes, based on the collected feedback has been incorporated in the discussion.

The purpose of the instrument is to deepen the understanding of factors influencing teachers' selection of EBPs for teaching students with Autism. The literature has shown a significant gap in the translation of EBPs into actual use in schools. Despite some of the factors including teachers' beliefs towards EBPs and organisational concerns have been identified, there is still inadequate study of factors under the framework of TPB. However, there is a lack of existing instruments to measure these factors. Therefore, this study develops and evaluates a TPB-based questionnaire designed to investigate factors including teachers' attitudes, subjective norms and perceived behavioural control. The refinement of the questionnaire contributes to the development of a valid measurement that informs the decision-making processes in EBP selection and use. Potential application includes insights for future teacher professional development, creating a more EBP-conducive school environment and policymaking.

Refining the instrument designed to understand the beliefs that guide teachers' decision-making serves as a strong foundation for future research to collect meaningful data. A pilot study with a larger sample size is recommended to generate robust data to ensure the generalisability of the findings. Future studies are needed to investigate the psychometric properties of the TIUE questionnaire to establish its reliability and validity. Potentially, the findings may facilitate the broader adoption of evidence-based teaching strategies for students with Autism, enhancing the overall quality of education in this area. Ultimately, gathers insights that could influence professional development and policymaking.

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Appendix A

Summary of Seven Established Evidence-based Practices

EBPs	Definitions and Examples of EBPs
1) Behavioural Interventions	The Behavioural Intervention category is comprised of interventions typically described as antecedent interventions (modification of situational events that typically precede the occurrence of a target behaviour) and consequent interventions (making changes to the environment following the occurrence of a targeted behaviour) (Luiselli, 2014; Matson, 2009; Ryan et al., 2014). Image redacted due to copyright restriction Example of Antecedent Behaviour Consequences chart (Twinkl, 2015a); Positive Reinforcement (Marigolds4Teaching, 2023)
2) Cognitive Behavioural Intervention Package	The Cognitive Behavioural Intervention Package consists of manualized modifications, typically involving making adjustments to materials (e.g., adding visual cues, role-play) or the structure of sessions or for specific purposes (e.g., to address anger management)(Sawyer & Nunez, 2014). Image redacted due to copyright restriction Example of Visual Cues (West, 2020); Anger Management Materials (Essere Therapies, 2023); Voice Control Scale (Twinkl, 2015b)
3) Modeling	Modeling (e.g., live and video modeling) is to correctly demonstrate a target behaviour to the person learning the new skill, so that person can then imitate the model (Buggey, 2009; Kourassanis et al., 2015). “Anyone who can correctly can independently perform the task can serve as a model – this includes the person with ASD" (Howard et al., 2015, p. 52)

	Image redacted due to copyright restriction Example of Video Modeling (Shira, 2018) Example of Live Modeling (Freepik, 2023)
4) Parent Training	Parent training is to provide parents with some skills (e.g., Strategies to develop imitation skills and commenting on the child) to use with their family members with Autism (Luiselli, 2014; Strauss et al., 2012). Image redacted due to copyright restriction Example of Parent Group Training(Pixy, 2023) Example of Parent Training in Manual Forms (Twinkl, 2018)
5) Peer Training Package	Peer training is to train peers who are socially skilled, willing to participate and able to imitate a model during social interaction with a child with Autism (Mahoney, 2019).
6) Scripting	Scripting is to guide how to use language to initiate or respond in certain situations (e.g., developing a verbal and/or written script about a specific skill or situation that serves as a model for the child with ASD) (MacDuff et al., 2007; Mahoney, 2019). Image redacted due to copyright restriction Example of Written Script (And Next Comes L, 2023)
7) Story-based Intervention	The story-based intervention focuses on an identified behaviour and involves written scenarios that aim to increase perspective-taking skills and are written from an 'I' perspective (Ryan et al., 2014). Image redacted due to copyright restriction Example of Social Story (Fors, 2017)

Appendix B

Teacher Intention Towards the Use of Evidence-based Practice (TIUE) Questionnaire

Introduction

The sample questionnaire aims to measure teachers' intentions and the factors influencing them when choosing EBPs for teaching students with Autism. You are invited to complete this questionnaire.

The questionnaire included three main sections:

- The first part consists of screening sessions to ensure that respondents meet the inclusion criteria for this survey.
- The second part is the construct-related items comprising four items concerning attitude, subjective norm, perceived behavioural control and intention.
- The third part is the teachers' demographics which is useful for participant description.

This survey should take approximately **6 minutes** to complete.

ELECTRIC CONSENT: Clicking on the "**agree" button** below indicates that you have read the above information, you are at least 18 years old, and you voluntarily agree to participate. If you do not wish you participate, please click the **"disagree" button** to decline participation.

- Agree
- Disagree

Don't hesitate to speak up if something is unclear or challenging to answer.
Your participation is entirely voluntary.

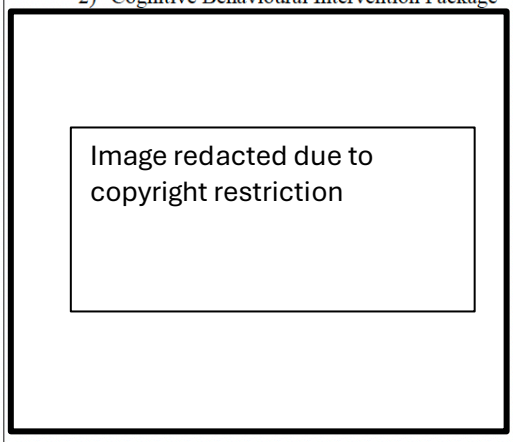
Part 1 Screening questions

Q1.1 Are you a ….?

- General teacher (Continue to Q1.1.1)
- Special education teacher → (Thank you for your time, but you do not meet the criteria for participation in this questionnaire)

Q1.1.1 Do you have any experience teaching or interacting with a child with Autism (ages 6-12)?

- Yes → (Start the survey)
- No → (Thank you for your time, but you do not meet the criteria for participation in this questionnaire)

Q1.2 Have you heard of this evidence-based practice? (Please tick all that apply)			
List of EBPs	Definition of the EBP	Not heard of	Heard of
2) Cognitive Behavioural Intervention Package  Example of Visual Cues (West, 2020); Example of Anger Management Materials (Essere Therapies, 2023); Example of Voice Control Scale (Twinkl, 2015b)	*"The Cognitive Behavioural Intervention Package are manualized modifications, typically involve making adjustments to materials (e.g., adding visual cues, role-play) or the structure of sessions or for specific purposes (e.g., to address anger management)"*		

Q1.2 Have you heard of this evidence-based practice? (Please tick all that apply)			
List of EBPs	Definition of the EBP	Not heard of	Heard of
3) Modeling  Example of Live Modeling (Freepik, 2023)	*"Modeling (e.g., live and video modeling) is to correctly demonstrate a target behaviour to the person learning the new skill, so that person can then imitate the model"*		

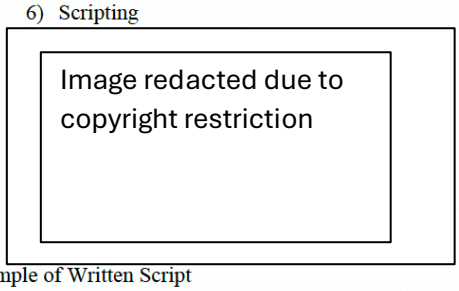
Q1.2 Have you heard of this evidence-based practice? (Please tick all that apply)

List of EBPs	Definition of the EBP	Not heard of	Heard of
4) Parent Training  Example of Parent Training in Manual Forms (Twinkl, 2018)	*"Parent training is to provide parents some skills (e.g., Strategies to develop imitation skills and commenting on the child) to use with their family members with Autism"*		

Q1.2 Have you heard of this evidence-based practice? (Please tick all that apply)

List of EBPs	Definition of the EBP	Not heard of	Heard of
5) Peer Training Package	*"Peer training is to train peers who are socially skilled, willing to participate and able to imitate a model during social interaction with a child with Autism"*		

Q1.2 Have you heard of this evidence-based practice? (Please tick all that apply)

List of EBPs	Definition of the EBP	Not heard of	Heard of
6) Scripting  Example of Written Script (And Next Comes L, 2023)	*"Scripting is to provide guidance on how to use language to initiate or respond in certain situations (e.g., developing a verbal and/or written script about a specific skill or situation which serves as a model for the child with ASD)"*		

Q1.2 Have you heard of this evidence-based practice? (Please tick all that apply)			
List of EBPs	Definition of the EBP	Not heard of	Heard of
7) Story-based Intervention Image redacted due to copyright restriction Example of Social Story (Fors, 2017)	*"Story based intervention focuses on an identified behaviour and involve a written scenarios that aim to increase perspective taking skills and are written from an 'I' perspective".*		

Part 2 TPB Questions

Instruction

- Many questions in this survey make use of rating scales with 7 places, you are to rate the number that best describes your opinion. For example, if you were asked to rate "The Weather in Adelaide" on such a scale, the 7 places should be interpreted as follows:

The Weather in Adelaide is

bad: ____1____:____2___:____3____:____4___:____5___:___6___:____7____: good

extremely quite slightly neither slightly quite extremely

Definition of terms

- "***during my teaching***": referred to anytime, context, or situation that involves teaching students with Autism.
- "***identified EBPs***": referred to the seven evidence-based practices that have been proven to be effective for teaching students with Autism aged 6 to 12

Intention

Definition: "*An indications of a person's readiness to perform a behaviour*" (Fishbein & Ajzen, 2010)

Q2.1 I plan to use one of the identified EBPs during my teaching.
extremely unlikely: __1__:__2__:__3__:__4__:__5__:__6__:__7__: extremely likely

Q2.2 I will make an effort to use one of the identified EBPs during my teaching.
I definitely will not: __1__:__2__:__3__:__4__:__5__:__6__:__7__: I definitely will

Q2.3 I intend to use one of the identified EBPs during my teaching.
strongly disagree: __1__:__2__:__3__:__4__:__5__:__6__:__7__: strongly agree

Perceived Behavioural Control

Definition: "*people's perceptions of the degree to which they are capable of, or have control over, performing a given behaviour*" (Fishbein & Ajzen, 2010, p. 65)

Q2.4 Whether or not I use one of the identified EBPs during my teaching is
not at all up to me: __1__:__2__:__3__:__4_:__5__:__6__:__7__: completely up to me

Q2.5 If I really wanted to I could use one of the identified EBPs during my teaching.
extremely unlikely: __1__:__2__:__3__:__4__:__5__:__6__:__7__: extremely likely

Q2.6 I have complete control over using one of the identified during my teaching.
strongly disagree: __1__:__2__:__3__:__4__:__5__:__6__:__7__: strongly agree

Q2.7 I have the resources and the knowledge and the ability to use one of the identified EBPs during my teaching.
definitely false: __1__:__2__:__3__:__4__:__5__:__6__:__7__: definitely true

Norm
Definition: "*a person's perception that important others prescribe, desire, or expect the performance or non-performance of a specific behaviour*" (Fishbein & Ajzen, 2010, p. 131).

Q2.8 Most people who are important to me think that
I should not: __1__:__2__:__3__:__4__:__5__:__6__:__7__: I should use one of the identified EBPs during my teaching

Q2.9 The majority of my colleagues use one of the identified EBPs in their teaching.
definitely false: __1__:__2__:__3__:__4__:__5__:__6__:__7__: definitely true

Q2.10 It is expected of me that I use one of the identified EBPs during my teaching.
definitely false: __1__:__2__:__3__:__4__:__5__:__6__:__7__: definitely true

Q2.11 Most people who are important to me would encourage me using of one of the identified EBPs during my teaching.
strongly disagree: __1__:__2__:__3__:__4__:__5__:__6__:__7__: strongly agree

Attitude
Definition: the "*tendency to respond with some degree of favourableness or unfavourableness to a psychological object, including a behaviour*" (Fishbein & Ajzen, 2010, p. 76).

Q2.12 For me to use one of the identified EBPs during my teaching is
extremely bad: __1__:__2__:__3__:__4__:__5__:__6__:__7__: extremely good

Q2.13 For me to use one of the identified EBPs during my teaching is
extremely worthless: __1__:__2__:__3__:__4__:__5__:__6__:__7__: extremely valuable

Q2.14 For me to use one of the identified EBPs during my teaching is
extremely unpleasant: __1__:__2__:__3__:__4__:__5__:__6__:__7__: extremely pleasant

Q2.15 For me to use one of the identified EBPs during my teaching is
boring: __1__:__2__:__3__:__4__:__5__:__6__:__7__: interesting

Part 3 Demographic Questions

Instruction

- We would now like to gather some personal information about you. Remember, all your answers are confidential.

Q3.1 What is your age (years)?

(Enter response here)

Q3.2 What is your gender?

- Male
- Female
- Other (Please specify)

Q3.3 What is the highest level of education you have completed?

- Bachelor's degree
- Postgraduate Certificate in Education
- Master's degree
- Doctoral degree
- Other (Please specify)

Q3.4 How many years of teaching experience do you have in teaching students with Autism (ages 6-12)?

(Enter response here)

Q3.5 Do you have received additional training related to Autism?

- Yes
- No (skip Q3.5.1)

Q3.5.1 What types of training related to Autism did you participate in? (Please select all that apply)

- University/ college courses/ teacher preparation program
- On-the-job training
- Certified training program
- School Inservice/ professional development workshop
- Online courses/ webinars
- Professional conferences
- Peer Teacher/ Therapist
- Parent/ support groups
- Self-study materials
- Other (please specify)

Q3.6 What is your current employment status?

- Full-time
- Part-time
- Contractual
- Casual
- Other (Please specify)

Q3.7 Which grades do you primarily teach? (Please select all that apply)

- Year 1
- Year 2
- Year 3
- Year 4
- Year 5
- Year 6

Q3.8 What are your main subjects? (Please select all that apply)

- English
- Mathematics
- Science
- Humanities and social science (history, geography, economics and business, civics and citizenship)
- The arts (dance, drama, music, media arts, visual arts)
- Technologies (design and technologies, digital technologies)
- Health and physical education
- Languages
- Other (Please specify)

Open-ended Questions

- If there are any addition comments (e.g., the flow, organization, or technical difficulties in the questionnaire) you want the researcher to know, please indicate it below.

(Enter response here)

Ending words:

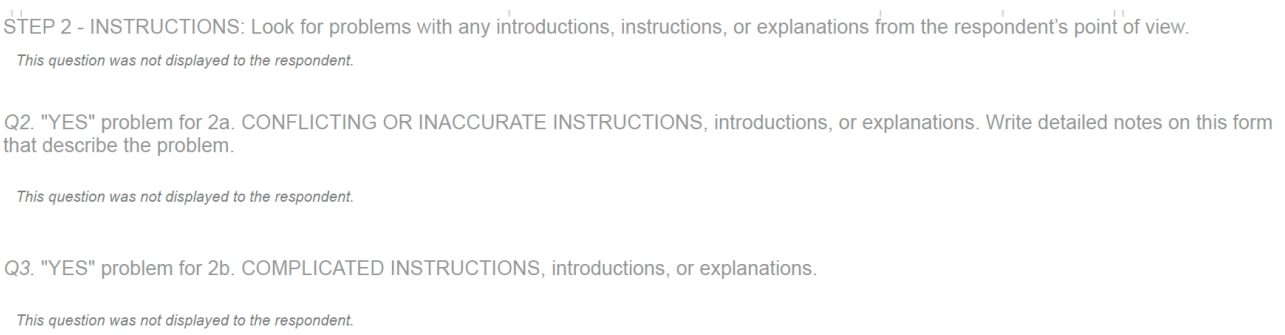
Thank you for your participation

Appendix C

QAS-99 Manual and Coding Form

Figure D.1

The QAS-99 Coding Form (Step 2)



As outlined in the Question Appraisal System (QAS-99) (Willis et al., 1999), further details on the QAS-99 manual and coding form, please look at https://www.researchgate.net/publication/267938670_Question_Appraisal_System_QAS-99_By

Appendix D

A Letter of Ethical Approval

Flinders University

HUMAN ETHICS LOW RISK PANEL

APPROVAL NOTICE

Dear Dr Emma Grace,

The below proposed project has been **approved** on the basis of the information contained in the application and its attachments.

Project No:

6174

Project Title:

Developing a Pilot Instrument to Assess Factors Influencing South Australian Teachers' Intentions to Use Evidence-Based Practices in Autism Education

Chief Investigator:

Dr Emma Grace

Approval Date: 28/11/2023

Expiry Date: 01/07/2024

Approved Co-Investigator/s:

Miss Wing Ying Bianca Chung

The following documents have been approved:

File Name	Date	Version
Proposed TIUE questionnaire	29/09/2023	1
QAS-99 coding form without TIUE question	29/09/2023	1
Attachment A_TPB Model Key Terms	05/11/2023	1
Attachment B_TPB Questionnaire Construction Protocol	05/11/2023	1
Attachment C_QAS-99 coding Manual	05/11/2023	1
Invitation Email Text for Professional Group Review_26Nov	27/11/2023	3
Invitation Email Text for Expert Group Review_26Nov	27/11/2023	3
Instruction with Consent Form and QAS-99 Coding Form with first example question_26Nov	27/11/2023	3
Participant Information Sheet_26Nov	27/11/2023	3

Please note: *For all research projects wishing to recruit Flinders University students as participants, approval needs to be sought from the Pro Vice-Chancellor (Learning and Teaching Innovation), Professor Michelle Picard. To seek approval, please provide a copy of the Ethics approval for the project and a copy of the project application (including Participant Information and Consent Forms, advertising materials and questionnaires etc.) to the Pro Vice-Chancellor (Learning and Teaching Innovation) via michelle.picard@flinders.edu.au.*

RESPONSIBILITIES OF RESEARCHERS AND SUPERVISORS

1. Participant Documentation

Please note that it is the responsibility of researchers and supervisors, in the case of student projects, to ensure that:

- all participant documents are checked for spelling, grammatical, numbering and formatting errors. The Committee does not accept any responsibility for the above mentioned errors.
- the Flinders University logo is included on all participant documentation (e.g., letters of Introduction, information Sheets, consent forms, debriefing information and questionnaires – with the exception of purchased research tools)and the current Flinders University letterhead is included in the header of all letters of introduction. The Flinders University international logo/letterhead should be used and documentation should contain international dialling codes for all telephone and fax numbers listed for all research to be conducted overseas.
- the HREC contact details, listed below, are included in the footer of all letters of introduction and information sheets.

  This research project has been approved by Flinders University's Human Research Ethics Committee (Project ID 6174). If you have any complaints or reservations about the ethical conduct of this study, you may contact Flinders University's Research Ethics & Compliance Office via telephone on 08 8201 2543 or by email human.researchethics@flinders.edu.au.

2. Annual Progress / Final Reports

In order to comply with the monitoring requirements of the *National Statement on Ethical Conduct in Human Research 2007 (updated 2018)* an annual progress report must be submitted each year on the approval anniversary date for the duration of the ethics approval using the HREC Annual/Final Report Form available online via the ResearchNow Ethics & Biosafety system.

Please note that no data collection can be undertaken after the ethics approval expiry date listed at the top of this notice. If data is collected after expiry, it will not be covered in terms of ethics. It is the responsibility of the researcher to ensure that annual progress reports are submitted on time; and that no data is collected after ethics has expired.

If the project is completed *before* ethics approval has expired please ensure a final report is submitted immediately. If ethics approval for your project expires please either submit (1) a final report; or (2) an extension of time request.

3. Modifications to Project

Modifications to the project must not proceed until approval has been obtained from the Ethics Committee. Such proposed changes / modifications include:

- change of project title;
- change to research team (e.g., additions, removals, researchers and supervisors)
- changes to research objectives;
- changes to research protocol;
- changes to participant recruitment methods;
- changes / additions to source(s) of participants;
- changes of procedures used to seek informed consent;
- changes to reimbursements provided to participants;
- changes to information / documents to be given to potential participants;
- changes to research tools (e.g., survey, interview questions, focus group questions etc);
- extensions of time (i.e. to extend the period of ethics approval past current expiry date).

To notify the Committee of any proposed modifications to the project please submit a Modification Request Form available online via the ResearchNow Ethics & Biosafety system. Please note that extension of time requests should be submitted prior to the Ethics Approval Expiry Date listed on this notice.

4. Adverse Events and/or Complaints

Researchers should advise the Research Ethics, Integrity & Compliance Office immediately if:

- any complaints regarding the research are received;
- a serious or unexpected adverse event occurs that effects participants;
- an unforeseen event occurs that may affect the ethical acceptability of the project.

Yours sincerely,

Hendryk Flaegel

on behalf of

Human Research Ethics Low Risk Panel
Research Development and Support
human.researchethics@flinders.edu.au

Flinders University
Sturt Road, Bedford Park, South Australia, 5042
GPO Box 2100, Adelaide, South Australia, 5001

Appendix E

Invitational Email to Expert and Professional Teacher Group

Invitation Email Text for Expert Group Review

Dear Xxxxx

I am writing this letter to invite your participation in my dissertation research. This research focuses on improving the development of a questionnaire about interventions provided for children with autism in an education setting.

I am an international student from Hong Kong, currently studying Master of Inclusive and Specialised Education at Flinders University in South Australia. My project is titled *"Developing a Pilot Instrument to Assess Factors Influencing South Australian Teachers' Intentions to Use Evidence-Based Practices in Autism Education"*. The project has been approved by Flinders University's Human Research Ethics Committee (HREC 6174).

I have developed a draft questionnaire named "*Teacher Intention toward the Use of Evidence-based Practices (TIUE)*". To ensure that the questionnaire is useful and comprehensible, we are recruiting opinions and reactions with the help of people such as yourself, I would like to extend an invitation for you to participate as an expert in the questionnaire development process for my pilot questionnaire. The evaluation process typically requires around 30-90 minutes for completion, depending on the level of detail provided in your response. I am specifically seeking individuals with knowledge or experience in the fields of inclusive education and/or Autism teaching and/or survey design. I believe your valuable insights would make you an ideal candidate to be part of the expert group.

Your participation is voluntary, and you are free to stop at any time or decline to answer any question or provide comments. Your identity will remain anonymous in the research, and a unique study number will be assigned to each respondent. As a token of appreciation for your time and effort, you will receive a $20 e-gift voucher.

I have attached the study information sheet, the letter of introduction by my supervisor and a link to the online questionnaire and evaluation.

Your participation and support are vital for this study. I look forward to hearing your response to this invitation, if possible, within the next two weeks.

Sincerely,
Bianca Chung

Invitation Email Text for Professional Group Review

Dear Xxxxx

I am writing this letter to invite your participation in my dissertation research. This research focuses on improving the development of a questionnaire about interventions provided for children with autism in an education setting.

I am an international student from Hong Kong, currently studying Master of Inclusive and Specialised Education at Flinders University in South Australia. My project is titled *"Developing a Pilot Instrument to Assess Factors Influencing South Australian Teachers"* Intentions to Use Evidence-Based Practices in Autism Education". The project has been approved by Flinders University's Human Research Ethics Committee (HREC 6174).

I have developed a draft questionnaire named *"Teacher Intention toward the Use of Evidence-based Practices (TIUE)"*. To ensure that the questionnaire is useful and comprehensible, we are recruiting opinions and reactions with the help of people such as yourself, I would like to extend an invitation for you to participate as a professional participant in the questionnaire development process for my pilot questionnaire. The evaluation process typically requires around 30-90 minutes for completion, depending on the level of detail provided in your response. I am specifically seeking qualified teachers without special education qualifications and engaged in teaching students aged 6 to 12 with Autism. I believe your valuable insights would make you an ideal candidate to be part of the professional group.

Your participation is voluntary, and you are free to stop at any time or decline to answer any question or provide comments. Your identity will remain anonymous in the research, and a unique study number will be assigned to each respondent. As a token of appreciation for your time and effort, you will receive a $20 e-gift voucher.

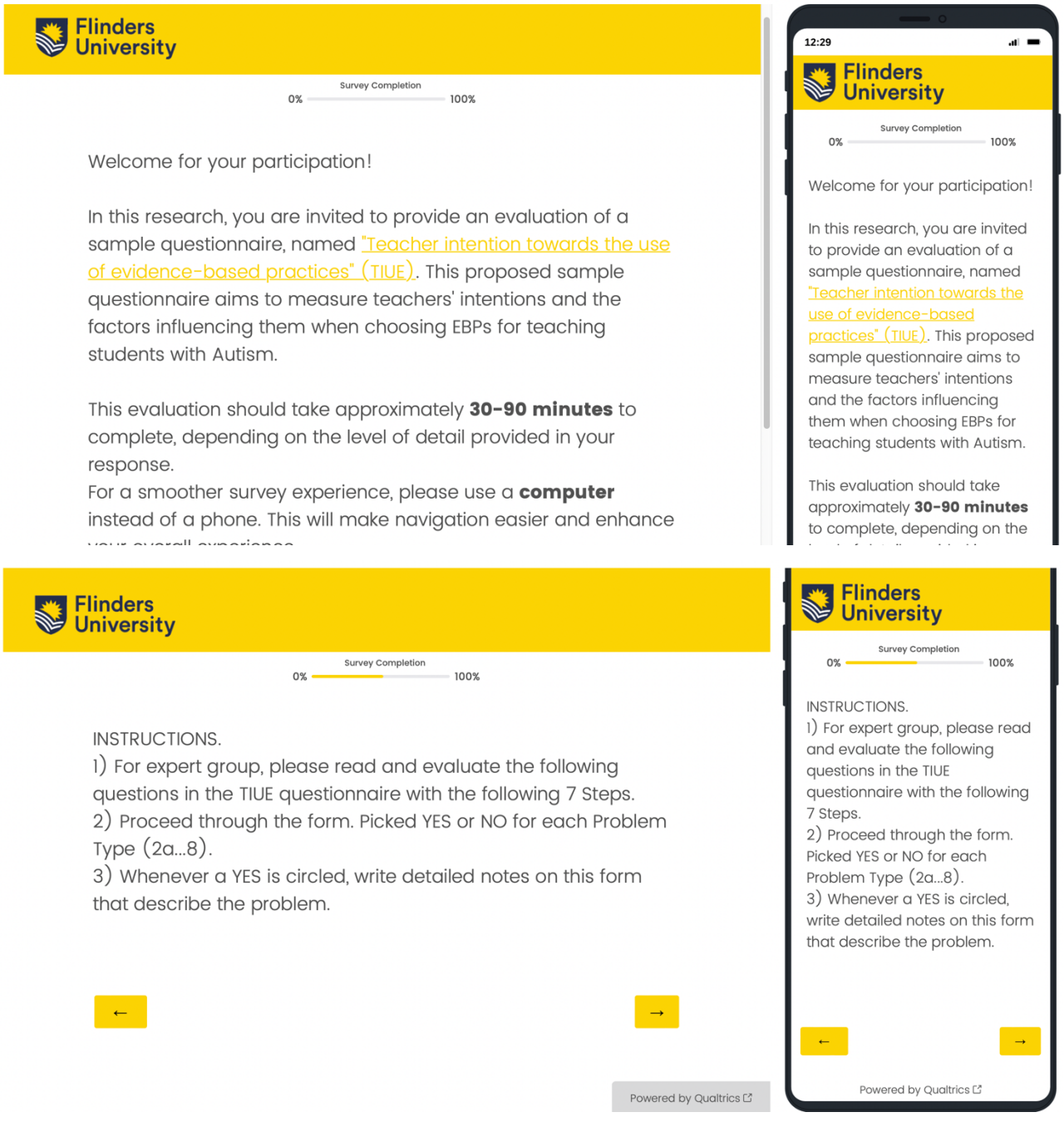
I have attached the study information sheet, the letter of introduction by my supervisor and a link to the online questionnaire and evaluation.

Your participation and support are vital for this study. I look forward to hearing your response to this invitation, if possible, within the next two weeks.

Sincerely,
Bianca Chung

Appendix F

Qualtrics Online Survey



Appendix G

Alignment Check for Research Guiding Questions and Questionnaire Items

Table H1

Alignment Check for Research Guiding Questions and Questionnaire Items (TIUE Part 1)

Guiding Questions	Alignment Criteria	Q1.1	Q1.1.1	Q1.2 (1)	Q1.2 (2)	Q1.2 (3)	Q1.2 (4)	Q1.2 (5)	Q1.2 (6)	Q1.2 (7)
Stage 1 Guiding Question A: What are the general educators' intentions to use current EBPs in instructing students with ASD?	Aligns with General Educators	x	x							
	Aligns with Current EBPs			x	x	x	x	x	x	x
Stage 1 Guiding Question B: What are the general educators' attitudes, SN, and PBC towards using these EBPs?	Aligns with General Educators	x	x							
	Aligns with Current EBPs			x	x	x	x	x	x	x

Table H2

Alignment Check for Research Guiding Questions and Questionnaire Items (TIUE Part 2)

Guiding Questions	Alignment Criteria	Q2.1	Q2.2	Q2.3	Q2.4	Q2.5	Q2.6	Q2.7	Q2.8	Q2.9	Q2.10	Q2.	Q2.	Q2.	Q2.	Q2.

											11	12	13	14	15
Stage 1 Guiding Question A: What are the general educators' intentions to use current EBPs in instructing students with ASD?	Aligns with Intention	x	x	x											
Stage 1 Guiding Question B: What are the general educators' attitudes, SN, and PBC towards using these EBPs?	Aligns with Perceived Behavioural Control (PBC)				x	x	x	x							
	Aligns with Norms (SN)								x	x	x	x			
	Aligns with Attitude												x	x	x	x
What are the general educators' attitudes, SN, and PBC	Align with Perceived Behavioural Control (PBC)	x	x	x	x										

towards using these EBPs?		
	Align with Norms (SN)	x

Table H3

Alignment Check for Research Guiding Questions and Questionnaire Items (TIUE Part 3)

Guiding Questions	Alignment Criteria	Q3.1	Q3.2	Q3.3	Q3.4	Q3.5	Q3.5.1	Q3.6	Q3.7	Q3.8	Open-ended Questions
Stage 1 Guiding Question A: What are the general educators' intentions to use current EBPs in instructing students with ASD?	Align with General Educators	x			x			x	x	x	
	Align with Instructing Students with ASD				x	x	x				
Stage 1 Guiding Question B: What are the general educators' attitudes, SN, and PBC towards using these EBPs?	Align with Perceived Behavioural Control (PBC)	x		x	x	x	x	x	x	x	
	Align with Norms (SN)							x	x	x	

Appendix H

Comprehensive Overview by Problem Type (Self-assessment Data)

PART 1 Screening Questions			
Problem Types (Frequency)	**Problem Description**	**Affected TIUE Questions**	**Qualitative Suggestion (Self-assessment)**
Step 3: Clarity (3)	Ungrammatical Wording	Question 1.1	Rephrase to "What is the best description of your current role?"
	Undefined Technical Terms	Question 1.1, Question 1.2	Define terms like "evidence-based practices (EBPs)" and "special education teacher"
	Vague Wording	Question 1.1	Ensure phrasing is precise
	Missing Reference Periods	Question 1.1	Add a clear reference period
Step 7: Response (3)	Undefined Technical Terms	Question 1.1	Define categories clearly, such as "general teacher" and "special education teacher"
	Overlapping Response Categories	Question 1.1	Make categories mutually exclusive
Step 4: Assumptions (1)	Inappropriate Assumptions About Respondents	Question 1.1	Account for multiple roles, e.g., a teacher could hold both general and special education qualifications

Step 8: Other problems (7)	Formatting: Word alignment and picture size issues	All Questions in Part 1	Align words properly and enlarge images to improve readability
PART 2 TPB Questions			
Problem Types (Frequency)	**Problem Description**	**Affected TIUE Questions**	**Qualitative Suggestion (Self-assessment)**
Step 2: Instructions (2)	Complicated Instructions	Question 2.9, Question 2.12	Highlight instructions using different colours to reduce confusion
Step 3: Clarity (2)	Undefined Technical Terms	Question 2.1, Question 2.13	Place definitions of terms near questions, replace the abbreviation TPB and define EBPs near the question
Step 5: Knowledge/Memory (1)	Recall Failure	Question 2.10	Provide a reminder or list of the seven EBPs to help respondents with memory recall during the questionnaire
PART 3 Demographic Questions			
Problem Types (Frequency)	**Problem Description**	**Affected TIUE Questions**	**Qualitative Suggestion (Self-assessment)**
Step 3: Clarity (6)	Ungrammatical Wording	Question 3.5	Revise to "Have you received additional training?"
	Vague Wording	Question 3.8	Phrase it as "What are your main teaching subjects?" and add a reference period
	Missing Reference Periods	Question 3.5.1,	Add a reference period to provide context

		Question 3.7	
	Vague Wording in Response	Question 3.7	Include an "Other" option for students in overlapping grades (e.g., age 12 in both year 7 and year 8)

Appendix I

Comprehensive Overview by Problem Type (Expert Group Data)

PART 1 Screening Questions			
Problem Types (Frequency)	**Problem Description**	**Affected TIUE Questions**	**Qualitative Suggestion (Expert Group review)**
Step 2: Instruction (5)	Conflicting or inaccurate instructions, introductions	Question 1.1.1	Comment "Avoid the word 'proven', some people take offence to things being 'proven'." Rephrase to: "have been shown..." Suggest adding the definition of Autism "Provide a definition of Autism, for example, any kind of diagnosis"
		Question 1.2 (1 & 2)	Suggest adding the definition "What's the definition of heard of? Too general"
	Complicated instruction	Question 1.2 (2-Cognitive Behavioural Intervention Package)	Suggest "simpler description needed e.g. Practices that include steps taken before a behaviour happens (to change the situation that leads to the behaviour), and the steps taken after the behaviour occurs (to change the environment afterwards)"
Step 3: Clarity (7)	Lengthy Wording	Introduction	Rephrase the introduction into "If you are a general teacher, this questionnaire will ask you about your intentions to use evidence-based practices (EBP) in your teaching students with Autism. The seven EBPs we would like you to consider have been proven to be effective for teaching students with Autism aged 6 to 12. They are explained at the beginning of the questionnaire (you may or may not have heard of them). You will then be asked to rate your intentions to

			use ANY of them in your teaching students with Autism.”
	Undefined Technical Terms	Question 1.1 Question 1.1.1	Define categories, "make it clear what you mean by general teacher" and "make it clear what you mean by Sp Ed teacher". Provide more detailed definitions of Autism.
	Reference period	Question 1.1.1	Include the relevant year level to clarify the reference period.
	Vague Wording	Question 1.1 Question 1.2 (1-Behavioural Intervention)	Without clear definitions, teachers may not know if they should proceed. Provide a clear definition of “heard of.” “Everyone has a different understanding of heard of” Advise to add “only” and “make it clear that these are the ones you want respondents to think about.” for the seven evidence-based practices (EBPs).
	Lengthy Wording	Question 1.1.1	Rephrase to “In your work, have you taught or interacted with a child with Autism (aged 6-12)”
Step 4: Assumptions (2)	Inappropriate Assumptions About Respondents	Question 1.1 Question 1.1.1	Do not assume all respondents understand the same terms. “It’s assumed teachers know about autism”. Schools in different states use varied terminology, and not all teachers have knowledge of Autism.
Step 8: Other Problem (2)	Rephrasing with a Kind Message	Question 1.1	Rephrase the appreciative message to: “Thank you so much for your willingness to be part of this study. However, since this study is focusing specifically on "general" teachers that do not have your expertise, we won't need you to answer any more questions. We appreciate your interest and understanding!”
	Inclusion of Other Opinions	Question 1.1.1	Include perspectives from general educators who haven’t taught students with Autism, “This information would also be useful” Suggested message: “We’re

			interested in learning how likely you are, as a general teacher, to use evidence-based practices in your teaching of children with autism. Please feel free to answer the questions as honestly as possible, without assistance."
PART 2 TPB Questions			
Problem Types (Frequency)	**Problem Description**	**Affected TIUE Questions**	**Qualitative Suggestion (Expert Group review)**
Step 2: Instruction (13)	Conflicting or inaccurate instructions, introductions	Question 2.1	Provide an introduction before the rating scale. Avoid involving special education teachers for assistance. Suggested message: "We are interested in learning how likely you are, as a general teacher, to use EBPs in teaching students with Autism. Please answer honestly without assistance." Rephrase the Part 2 TPB questions instruction into "Many questions in this survey make use of rating scales with 7 points. Please select a number that best describes what you think (there are no right or wrong answers). For example, if you were asked to rate "The Weather in Adelaide is great in Winter" on such a scale, you could select **one** of the 7 points for your answer. The Weather in Adelaide is great in Winter"
		Question 2.2	Clarify "effort". "Effort is a very vague description".
		Question 2.4	Avoid using "up to me,". "Up to me is a very general expression, it's hard to define or measure". "Hard to tell how it's up to me. The teaching environments is more complicated to tell if something is up to teachers or not."
		Question 2.5	Provide background information and a definition for "really want to" as it is unclear. "Definition of really want to? Unclear and hard to answer. Background information is also needed"
		Question 2.6	Provide a "definition of complete control"

		Question 2.7	Commented to replace with a different question wording, “Including resources, knowledge makes this question double barrelled - should select only one - suggest ‘ability’.”
		Question 2.8	Define “important to me, in the education sector?” Changing the question wording, “I don’t think this question will work in this context as ‘significant others’ are not likely to know about EBPs. I would suggest making reference to significant Colleagues”.
		Question 2.11	Changing “most of the people who are important to me” to “most of the colleagues who matter most to me”.
		Questions 2.1 - 2.15	Specify the teaching “of students with Autism” behind each question.
	Complicated instruction	Question 2.6	Specify which class or setting the question refers to, as teachers often manage multiple classes. “Hard to tell, teachers teach more than one class, which I be do you refer to?”
Step 3: Clarity (5)	Complex technical terms	Question 2.1	Clarify the need for intention definition “Not sure a definition of intent is required - it could just add confusion”
	Vague Wording	Question 2.2	Make “effort” measurable.
		Question 2.5	The question is vague. “Yes, it depends on the situation. Different classes have different students with diverse learning profiles. So the answer depends”
	Lengthy Wording	Question 2.7	Too lengthy to have three phrases: resources, knowledge and ability
	Awkward Wording	Question 2.8	The word “important” is awkward. Replace the word “important” with a more specific term.
Step 4: Assumptions (1)	Inappropriate Assumptions	Question 2.6	“It is assumed that teachers only have one setting. Indeed, teachers have a changing environment every day.

	About Respondents		
Step 6: Sensitivity/ Bias (2)	Sensitive Content	Question 2.4	Be mindful that this question may be sensitive as "this question may involve school policies or individual department dynamics".
		Question 2.6	Asking whether a teacher has "complete control" may be too personal.
Step 7: Response categories (1)	Overlapping response categories	Question 2.2	Suggested to "Avoid using 'effort' as it may overlap with 'behavioural control'."
Step 8: Other problem (2)	Changing to another scaling method	Question 2.1 - 2.15	Commented that "The current bad/good scale is a semantic differential scale - it is not the sort you actually use in your questionnaire. Krosnick et al. (2019) suggest they are easy to construct, but the Likert/Thurstone scales you use are more beneficial in research." "Avoid semantic differential scale". Suggested using "disagree and "agree" of a Likert or Thurstone scale"
	Insufficient Items for Measuring Intention	Question 2.1 - 2.15	Add more questions to measure intent, "You have only 3 items to measure intent. This is not good practice - you should aim for a minimum of 4". Suggested additional TPB questions for intention: "Q2.4 When teaching students with Autism, I would use one of the identified EBPs Very strongly disagree: __1__:__2__:__3__:__4__:__5__:__6__:__7__: very strongly agree"
PART 3 Demographic Questions			
Problem Types (Frequency)	**Problem Description**	**Affected TIUE Questions**	**Qualitative Suggestion (Expert Group review)**

Step 6: Sensitivity/ Bias (3)	Sensitive Content	Question 3.1	Avoid asking directly for age; use age ranges instead. "Too private, age range is better"
		Question 3.2	Reconsider the need to ask for gender, as some respondents may find it offensive. "Necessary to know for the survey? Some people may feel offended." Add one more response option, "I suggested adding one more option: prefer not to say."

Appendix J

Comprehensive Overview by Problem Type (Teacher Group Data)

PART 1 Screening Questions			
Problem Types (Frequency)	**Problem Description**	**Affected TIUE Questions**	**Qualitative Suggestion (Teacher Group review)**
Step 3: Clarity (2)	Lengthy Wording	Question 1.2 (6-Scripting)	Revise to: “Scripting is a tool used to guide how language is applied when initiating or responding to specific situations.”
	Ungrammatical Wording	Question 1.2 (7-Story based intervention)	Add “A” before “story-based intervention.”
PART 2 TPB Questions			
Problem Types (Frequency)	**Problem Description**	**Affected TIUE Questions**	**Qualitative Suggestion (Teacher Group review)**
Step 3: Clarity (6)	Lengthy Wording	Question 2.9 Question 2.11	Replace "…would encourage me using of one of the..." with "...would encourage me to use one of the..." to improve clarity.
	Awkward Wording	Question 2.12	Change “is” to “would be,” “bad” to “unhelpful,” and “good” to “helpful.”
	Lengthy Wording	Question 2.13	Revise to: “For me, using one of the... is...”
	Ungrammatical Wording	Question 2.14 Question 2.15	Ensure consistent tense. Use “would be” for future tense where applicable.
PART 3 Demographic Questions			
Problem Types (Frequency)	**Problem Description**	**Affected TIUE Questions**	**Qualitative Suggestion (Teacher Group review)**

Step 2: Instruction (2)	Inaccurate Instruction	Question 3.7	Add “reception class” as some reception students are 6 years old.
Step 3: Clarity (2)	Ungrammatical Wording	Question 3.5	Revise to: “Have you received any additional training related to Autism?”
	Ungrammatical Wording	Question 3.8	Rephrase as: “What are your specialties?”

Appendix K

Full List of Suggested Questionnaire Changes by
Self-Assessment, Expert Review, and Teacher Feedback

Introduction
• Introduction paragraph o Rephrase the introduction into "If you are a general teacher, this questionnaire will ask you about your intentions to use evidence-based practices (EBP) in your teaching students with Autism. The seven EBPs we would like you to consider have been proven to be effective for teaching students with Autism aged 6 to 12. They are explained at the beginning of the questionnaire (you may or may not have heard of them). You will then be asked to rate your intentions to use ANY of them in your teaching students with Autism."
Part 1: Screening Questions
• Question 1.1: o Rephrase to "What is the best description of your current role?" to correct ungrammatical wording. o Define technical terms like "evidence-based practices (EBPs)", "special education teacher" and "general education teacher" for better understanding. o Add a reference period to provide context. o Add "Other" as a response option to account for respondents holding multiple roles by allowing multiple selections. o Rephrase the appreciative message to be more inclusive and respectful of respondents' expertise. E.g. "Thank you so much for your willingness to be part of this study. However, since this study is focusing specifically on "general" teachers that do not have your expertise, we won't need you to answer any more questions. We appreciate your interest and understanding!" o Clarify the phrase "heard of" and ensure precise instructions for the identified seven EBPs. • Question 1.1.1: o Rephrase the introduction to avoid terms like "proven" and replace them with "have been shown." o Add detailed definitions for Autism

- Revise the question wording to: “In your work, do you teach or interact with a child with Autism (aged 6–12)?”
- Address assumptions by acknowledging varied terminology across states and gaps in respondent knowledge.
- Include perspectives from general educators who haven’t taught students with Autism, “This information would also be useful” Suggested message: “We’re interested in learning how likely you are, as a general teacher, to use evidence-based practices in your teaching of children with autism. Please feel free to answer the questions as honestly as possible, without assistance.”

- Question 1.2:
- Provide clear definitions for intervention types (e.g., behavioural and cognitive behavioural).
- Simplify complicated instructions for better readability.
- Specify that respondents should focus only on the seven EBPs outlined.

- Question 1.2 (6-Scripting):
- Revise to: “Scripting is a tool used to guide how language is applied when initiating or responding to specific situations.”

- Question 1.2 (7-Story-Based Intervention):
- Add “A” before “story-based intervention” to correct ungrammatical wording.

Part 2: TPB Questions

- Question 2.1:
- Add an introductory message clarifying the intentions behind the rating scale.
- Address vague wording by avoiding undefined terms like “effort” and provide clear definitions.

- Questions 2.1–2.15:
- Specify the teaching “of students with Autism” in all questions behind each question to specify the target population.
- Replace the semantic differential scale with a Likert scale (e.g., “disagree” to “agree”).
- Increase the number of questions measuring intent from three to at least four to align with best practices. Add one additional TPB question for intention: “Q2.4 When teaching students with Autism, I would use one of the identified EBPs

Very strongly disagree: __1__:__2__:__3__:__4__:__5__:__6__:__7__: very strongly agree”

- Question 2.2:
- Avoid overlapping terms like “effort” and “behavioural control.”

- Revise vague wording to make “effort” measurable.
- Question 2.4:
- Avoid ambiguous terms like “up to me” and replace them with more specific phrasing.
- Highlight potential sensitivities around teaching environments and department policies.
- Question 2.5:
- Provide a clear definition of “really want to”
- Question 2.6:
- Address assumptions about settings by specifying the class or environment referred to in the question.
- Provide a clear definition of “complete control.”
- Question 2.7:
- Simplify the question by focusing on “knowledge” instead of including multiple terms like resources and ability.
- Question 2.8 & 2.11:
- Replace vague or awkward terms like “people who are important to me…” with more specific language such as “Colleagues who work with me think that...”.
- Replace “Most people” with “Most colleagues (Director, head teacher, class teacher), ” to fit the educational context.
- Question 2.9 & 2.11:
- Revise to “...would encourage me to use one of the...” to improve clarity.
- Question 2.9 & 2.12:
- Simplify instructions using colour-coded highlights to make navigation easier.
- Question 2.10:
- Add a list of seven EBPs as a memory aid to mitigate recall issues.
- Question 2.12:
- Change “is” to “would be,” “bad” to “unhelpful,” and “good” to “helpful” to improve clarity and tone.
- Question 2.13:
- Revise to: “For me, using one of the... is...” to improve the clarity of the sentence.
- Question 2.14 & Question 2.15:
- Use “would be” for future tense to correct ungrammatical wording.

Part 3: Demographic Questions

- Question 3.1:

- Change the age question to use age ranges instead of asking directly for age to address privacy concerns.
- Question 3.2:
- Add an option for “Prefer not to say” in gender questions to improve inclusivity.
- Question 3.5:
- Revise for grammatical accuracy: “Have you received additional training?”
- Added a reference period for clarity.
- Question 3.7:
- Add foundation in one of the options, as some reception students in Australia are 6 years old, to address inaccurate instructions.
- Include an “Other” option to accommodate students in overlapping grades (e.g., age 12 in both year 7 and year 8).
- Question 3.8:
- Rephrase with “What are your specialties?” to correct ungrammatical wording.