

**Critical Review:**  
**What are the Elements that promote Successful Inclusive Education of Students with Down Syndrome?**

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This critical review examined the published literature on the elements that promote successful inclusive education of students with Down syndrome. A literature search yielded six articles. Study designs included: survey (3), qualitative (2) and non-randomized control trial (1). Three themes arose from the results of the included studies: attitudes of staff influences the inclusion experience, level of support and education of parents and teachers is often lacking, and certain strategies can be used to promote success within the inclusive classroom.

***Introduction***

Inclusive education involves fostering an attitude and providing an environment that allows all children, regardless of their diagnoses, the opportunity to learn within age appropriate classrooms with typical peers. Inclusion has been shown to have educational benefits for children with developmental disabilities in general (Katz & Mirenda, 2002) and children with Down syndrome specifically. Buckley, Bird, Sacks, and Archer (2006) found that students with Down syndrome educated in mainstream classrooms had improved expressive language, literacy and behavior compared to students with Down syndrome educated in segregated classrooms. Inclusion has the additional benefit of reducing prejudice and fostering positive attitudes towards people with Down syndrome among same age peers (Sirlopu et al., 2008).

Despite this evidence some educators still don't believe that mainstream classrooms are the best place for students with Down syndrome. Gilmore, Campbell and Cuskelly (2003) conducted a study that compared the knowledge about and attitudes towards inclusive education for students with Down syndrome in teachers and community members. Both groups recognized the potential benefits of inclusion for both the children with Down syndrome and their typical peers, however, only around 20% of each group thought that a mainstream classroom was the best place for a child with Down syndrome. This highlights the need for further education on the acceptance of students with Down syndrome into mainstream classrooms.

It is therefore valuable to look into the factors that make inclusion successful in order to provide information to parents and educators. Improving the success of inclusion will likely promote a more positive attitude towards inclusion among educators and the general public.

***Objectives***

The primary objective of this paper is to critically evaluate existing literature on factors that predict successful inclusive education of students with Down syndrome. The secondary objective is to provide recommendations to promote successful inclusive education.

***Methods***

Search Strategy

A variety of online databases were used to search for articles including: PsychINFO, PubMed, and Google Scholar. The following search terms were used to find relevant articles: (Down syndrome) AND (inclusion) OR (successful inclusion) OR (inclusive education).

The search was limited to articles written in English.

Selection Criteria

Studies selected for inclusion in this review were required to investigate elements of inclusion of students with Down syndrome.

Data Collection

Results of the search yielded six journal articles. Three of the articles used survey research. Two articles used qualitative research. One article employed a non-randomized clinical trial.

***Results***

Survey Research:

Survey research may include surveys, questionnaires and interviews. In general the benefits of survey research may include the ability to collect data from a large number of participants and the ability to collect large amounts of information. However, respondents

may not accurately represent themselves in their answers because they feel that they should respond in a certain way. Alternatively, the opinions of participants may not accurately represent the situation. When study specific, rather than gold standard surveys are used there is a greater risk for error being present in the study. Appropriate data analysis for survey research tends to be limited to descriptions of trends using percentages.

In a study examining the experiences of inclusion in the United Kingdom, Lorenz (1999) conducted a survey study using a study specific questionnaire provided to over 400 families of children (aged 4-16 years) with Down syndrome. Participants were recruited through flyers advertising that parents should pick up questionnaires to be involved in the study.

A total 315 parents who had children included in mainstream classrooms returned their questionnaires. Few details were provided regarding survey design. Results were described either using percentages of parents responding or only descriptor words such as “most” or “almost all”. Authors reported that 29% of parents reported having difficulty gaining an adequately supported spot for their child in a mainstream school. Parents reported that the level of support provided for their children was generally not child specific but rather based on school board policy. Results showed that in primary school, almost all teaching was carried out by teaching assistants, however, more than half of the teaching assistants had no formal training and no specific training in teaching students with Down syndrome.

Overall, this study provides somewhat suggestive evidence that there are challenges in obtaining adequate support for individuals with Down syndrome in mainstream classes, as reported by parents.

Wolpert (2001) investigated the strategies being used by teachers practicing inclusion of children with Down syndrome that had been identified as successful by parents. Wolpert mailed 250 questionnaires to families of children with Down syndrome. Parent’s mailing information was gained from the National Down Syndrome Society. Of the families contacted, 195 indicated that their children were successfully included. However, it should be noted that parent perception of successful inclusion may not have been a true reflection of their child’s experiences.

Following parental identification of successful inclusion, study specific questionnaires were sent to educators to determine effective inclusion strategies; 189 teachers responded (aged kindergarten to grade 12).

Teachers ranked the success of strategies on a scale from 1 (not effective) to 5 (very effective). Inter-rater agreement for written responses outside of presented choices was 99%. In their responses, teachers indicated the benefits of using one-on-one and small group teaching, hands on activities, manipulatives, computer instruction, drill, and praise for their students with Down syndrome. Teachers reported a desire for more individual instruction time for Children with Down syndrome, more training and more preparation time.

Overall, this study provides highly suggestive evidence for the success of the aforementioned strategies for including students with Down syndrome in mainstream classrooms.

Petley (1994) conducted structured interviews with 10 mothers of children with Down syndrome (in year 1 or 2 of school) and nine of their head teachers in order to determine their experiences and produce a “model of good practice” for inclusion. Methods were not discussed in detail in the paper. Parents and teachers both indicated a lack of advice and support both prior to and following school entry. Parents indicated feeling unable to voice concerns about use of support workers because the school may take it as a sign that their child couldn’t cope in mainstream classes. Teachers felt that students with Down syndrome tended to be mollycoddled both by peers and other adults. Parents and teachers both emphasized the importance of regular contact with each other. Overall attitudes towards inclusion were positive from both parents and teachers.

This study provides somewhat suggestive evidence that the aforementioned experiences are typical of inclusive classroom setting of students with Down syndrome.

#### Non-Randomized Clinical Trial:

Wang (2001) conducted a non-randomized clinical trial in order to determine the effect of teacher verbal and non-verbal scaffolding on students with Down syndrome in mainstream classrooms. Participants were all included into mainstream classrooms and were contacted through school administrators. The study involved observation and video recording of 40 seven-year-old students with Down syndrome and their teachers during daily activities. Teachers were examined on their use of: speech-only scaffolding, speech and gesture scaffolding, and gesture only scaffolding. Students were then examined on their responses to teacher instructions (paying attention or compliance with instruction = response, non-reaction = non-response), duration of focus on task, and success with task (correct completion of class task = success, incorrect completion = non-success). Four coders independently coded the data with acceptable inter-rater

reliability. Appropriate statistical analyses were conducted.

Results revealed that teachers used speech only scaffolding 71% of the time, joint speech and gesture scaffolding 27% of the time and gesture only scaffolding 2% of the time. However, when teachers used speech only scaffolding, students were least likely to respond (9%), spent the least amount of time on the task (32s) and had the lowest success rate (5%). Students were most likely to respond (58%), spent the most time on the task (74s) and had the highest success rates (54%) when teachers used speech and gesture scaffolding.

Overall, this study provides compelling evidence that children with Down syndrome benefit from teacher use of gestures to supplement verbal instructions in inclusive classroom settings.

#### Qualitative Research:

In general, qualitative research is beneficial in order to gain a deeper understanding of human experience. However, because of the case specific nature of qualitative research, the results may not necessarily be generalized to populations.

In order to explore the importance of context on successful educational transitions for students with Down syndrome, Rietveld (2008) conducted case studies investigating the experience of two sets of boys (two typically developing (TD) and two with Down syndrome) as they transitioned from preschool to school. The examined students experiences of exclusion or inclusion in their classrooms both prior to and following transitions were observed. All boys were aged 4 years 11 months. Method of participant selection was not discussed. Running record observations were conducted in the final week of preschool (8h) and the first six weeks of school (37-39h). Inductive content analysis was appropriately used to determine themes to describe the inclusion and exclusion that took place.

Results showed that in their preschools both boys with Down syndrome were excluded and TD boys were included. In the preschool setting, teachers engaged in a deficit/personal tragedy view of disability. They reinforced peers interacting with students with Down syndrome as an act of charity (“it was nice of you to read with him”) rather than a mutually beneficial experience (“it is so fun for you to read to together”). Classmates tended to view the children with Down syndrome as objects rather than playmates. Upon entering school one boy with Down syndrome became included and one TD boy became excluded. Rather

than within-child characteristics or presence of Down syndrome, the context and relationships appeared to determine level of inclusion. The educators of the boy with Down syndrome who became included promoted an inclusive classroom environment by helping TD peers interpret the behavior of the student with Down syndrome, highlighting his competencies and commenting on the mutually beneficial nature of shared experiences (“what beautiful cakes you two have made”). Classmates subsequently viewed the student with DS as a valuable participant.

Overall, this study provides highly suggestive evidence that the experience of inclusion of students with Down syndrome is greatly impacted by the culture of the classroom as cultivated by the attitude of the classroom teacher.

In order to gain an understanding of the experience of inclusion of students with Down syndrome, Johnson (2008), a special needs support teacher in mainstream schools, conducted interviews and administered questionnaires about the inclusion experience of six of her students with Down syndrome. A questionnaire was initially administered to classroom teachers, followed by a survey focusing on the views of those involved. The length of time between administration of questionnaire and survey was not specified. It was also unreported as to whether questionnaires and surveys were completed by the same teacher or different individuals. Surveys and questionnaires were not described, therefore cannot be evaluated on their validity. During the initial phase of the study structured interviews were conducted with parents, class teachers, head teachers and teaching assistants. During the second phase of the study parents, siblings and the students themselves were interviewed. Johnson wrote down answers during interviews in an attempt to prevent bias. Process of analyzing for themes arising from interviews and questionnaires was not discussed.

Parental responses indicated that they were concerned with lack of services (such as speech therapy) and resources. Additionally, lack of knowledge on the part of some staff members was a concern. Increased academic achievement and socialization were considered positives aspects of school experience. Prior to their inclusion experience only 2/11 teachers had positive attitudes about inclusion, however, following experience with inclusion, only one teacher remained negative. The responses of the students with Down syndrome highlighted their enjoyment of academic learning and ability to communicate with their friends. Name calling and negative attitudes of staff were mentioned as negative aspects of school.

Overall, due to the inherent bias of a teacher conducting research on her own students and the unclear methodological process, the aforementioned results of this study can only be considered minimally suggestive.

### *Discussion*

The articles included in this review all addressed the inclusion of students with Down syndrome in mainstream classes. Three main themes arose from the results of the studies: attitudes of staff influences the inclusion experience (Johnson, 2008; Petley, 1994; Reitveld, 2008), level of support and education of parents and teachers is often lacking (Johnson, 2008; Lorenz, 1999; Petley, 1994; Wolpert, 2001), and certain strategies can be used to promote success within the inclusive classroom (Petley, 1994; Wang, 2001; Wolpert, 2001). However, weaknesses in study design and methods may in some cases reduce the clinical relevance of findings.

Studies conducted by Reitveld (2008), Petley (1994) and Johnson (2008) all found that the attitudes of teachers affect the experience of inclusion. Reitveld found that an authentic experience of inclusion is greatly impacted by the culture of the classroom which is cultivated by the attitudes of the classroom educators. Petley found that teachers reported that staff and students tended to mollycoddle students with Down syndrome. As Reitveld's study suggests, this can have the effect of promoting the attitude among peers that the student with Down syndrome is an object rather than a contributing social partner. The results of Johnson's study, although less valid, indicate that negative attitudes of staff can directly impact the experiences of students involved in inclusion. Students with Down syndrome reported that one of the things they didn't like about their school placement was the negative attitudes of staff members.

Lorenz (1999), Petley (1994), Wolpert (2001) and Johnson (2008) all found that there was a perceived lack of education and support among both educators and parents of students with Down syndrome involved in inclusion. Lorenz found that parents often had difficulty obtaining an appropriately supported spot in a mainstream school for their children. Parents in Johnson's study reported a lack of services for their children (such as SLP services), resources and teacher training. Petley found that parents felt a lack of advice and support and an inability to voice their concerns about their child's placement. Teachers reported a similar lack of advice and support. Teachers in Wolpert's study reported a desire for more information

on the learning profile of students with Down syndrome.

Wolpert (2001) and Wang (2001) both assessed strategies that were successful for integrating students with Down syndrome. Wolpert found that small group, and one-on-one and computer instruction was beneficial. Teachers also reported the benefits of using drill, praise and hands on manipulatives. In agreement with the benefits of using visual support, Wang found that students with Down syndrome benefit from teacher use of gestures to supplement verbal instructions. Additionally, both parents and teachers in Petley's (1994) study highlighted the perceived importance from both parents and teachers of staying in regular contact with one another throughout the inclusion experience.

One challenge with the research presented in this review is that, in general, the level of evidence for the study designs is low (i.e. survey research, qualitative research). This may be due to ethical barriers of using study designs with higher levels of evidence. For example, it would likely not be ethical to perform a random control trial in this population given the known benefits of inclusion of students with Down syndrome. The studies are therefore limited to naturally occurring experiments which are helpful but have inherent limitations.

In some cases the participants involved in the studies may not have been representative of the population. Lorenz (1999) required parents who wanted to be involved in the study to pick up questionnaires. However, the type of parent who chose to pick up a questionnaire could have been qualitatively different than the parents who chose not to. This could have had an effect on the validity of the results. Similarly, the participants in the study conducted by Wolpert (2001) may not have been representative. Parents mailing information was gained from the National Down Syndrome Society. This method of participant selection may not have been representative of the population as it is possible that the parents who were members of the society were qualitatively different than parents who were not members of the society.

Overall, research on the inclusion of students with Down syndrome in mainstream classrooms is outdated. The current concept of inclusion may differ from the former. Therefore, although this critical review displays many interesting and relevant findings, the current concept of inclusion may not fully be encompassed in the older research.

Because inclusion is a broad topic the papers included in this review covered a broad range of elements. More research is needed in each of the thematic areas discussed in order to gain a better understanding of how to best support students with Down syndrome integrated into mainstream schools.

### *Clinical Implications*

In order to promote successful inclusion of students with Down syndrome, speech-language pathologists can take the following suggestions into account:

- Provide teachers and parents with information regarding the inclusion of students with Down syndrome.
- Attempt to connect students, parents and teachers with appropriate school and community supports whenever possible.
- Provide teachers with a learning profile of students with Down syndrome.
- Encourage teachers to supplement verbal instructions with gestures.
- Encourage teachers to implement the strategies of small group, computer based and one-on-one instruction and use of manipulatives, drill and praise.
- Promote a positive inclusive attitude by helping peers interpret behaviors of students with Down syndrome, highlighting their competencies and commenting on the mutually beneficial nature of shared experiences. Discuss the importance of this attitude with classroom educators.
- Encourage frequent communication among team members.

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