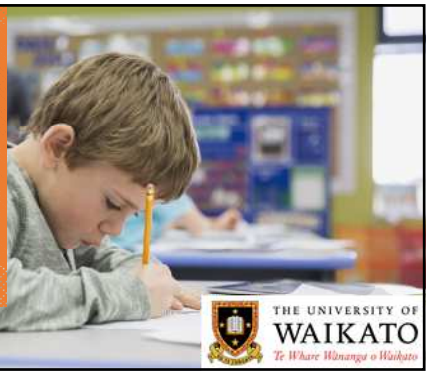
An Experimental Evaluation of the Introduction of Bodyfurn Chairs on On-Task and Disruptive Behaviour in the Classroom.

Angelika Anderson and Isaac Martin



Background

Smart Classroom

Collaboration between Furnware, Callaghan Innovation and the University of Waikato to explore learning in the classroom.

Introduction

Many classroom environmental factors, including furniture can significantly impact on academic achievement (Barrett et al., 2015; Datta, 2014)

Introduction

The kind of seating used matters:

- Stapp (2018); regular chairs with or without 'o' sit cushions: time on-task better for cushion
- Matin Sadr et al. (2017); regular classroom chairs, vs. therapy balls, and air cushions: mean sitting time better for therapy balls than regular chairs
- Mead, Scibora, Gardner, and Dunn (2016); regular classroom chairs vs. stability balls: significantly better academic achievement with stability balls
- Fedewa and Erwin (2011); regular classroom chairs vs. stability balls: better in-seat and on-task behaviour with stability balls.

Introduction

The kind of seating used matter

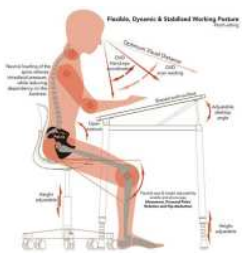
Explanations for the findings?

- Pain / discomfort
- Circulation
- Student perception / satisfaction

Introduction

Ergonomic chairs

- Adjustable
- Flexible
- Knight and Noyes (1999) showed a small but significant improvement in on-task time
- Wingrat and Exner (2005) showed improvements in time on-task and sitting behaviours



Introduction

Furnware, a NZ Company:
Bodyfurn chairs

- designed to promote healthy blood flow and move dynamically with the user
- resizable

Wilf Malcolm Institute of Educational Research (2006): exploratory study – movement and off task behaviour.
Findings suggest a decrease in movement but many limitations

Aim

- Evaluate the effect that Bodyfurn chairs have on predictors of academic achievement in the classroom and compare this to the regular classroom chairs.
- Reliable predictors of academic achievement: academic engagement (on-task behaviour), disruptive behaviour and student perceptions of satisfaction

Methods

Participants

- 15 primary school students – (3 Groups of 5).
- 3 Teachers – one for each group
- Each Group had a different class subject during class sessions (maths, reading and writing)

Selection Criteria

- Good attendance
- Average in academic achievement and behaviour (i.e. not too well-or misbehaved) to avoid ceiling and floor effects.

Recruitment and Ethics

- Teachers, students and parents/caregivers gave informed consent before they could be included in the study.
- Ethics Committee Approval.

Methods

Independent Variables

- The chairs being used by the participants
- Regular classroom chairs (baseline phase)
- Bodyfurn chairs (intervention phase)

Dependent Variables

- On-Task Behaviour
- Disruptive Behaviour

Social Validity Data

- Informal interviews/discussion with participants

Procedure

Setting

- Class sessions took place in a breakout classroom.

Schedule

- Sessions were integrated into the weekly class schedule, with several 25-minute sessions scheduled for each group.

Data Collection

- On-task behaviour was recorded using momentary time sampling with 30-second intervals Disruptive behaviour was recorded using event sampling.
- Informal interviews/discussions took place after all data collection was finished.

Experimental design

- Multiple baseline across participants design

Data Analysis

Visual Analysis

- On-task and disruptive behaviour group totals were graphed across sessions for analysis.
- Averages for baseline and intervention phases were calculated for comparison.

- Effect sizes were calculated using Tau-U (< 065 = small effect, 0.66-0.92 = medium effect, > 0.92 = strong effect.

On-Task Behaviour

Group A

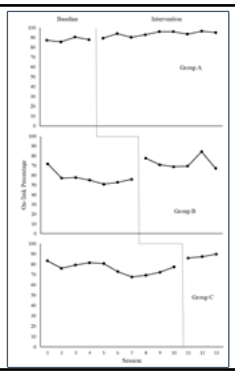
- Ceiling Effect
- Baseline (*M*= 87.8%)
- Intervention (*M*= 93.7%)
- = Mean increase of 5.9%
- Tau-U (0.83, *p* < .05)

Group B

- Baseline (*M*= 57.2%)
- Intervention (*M*= 72.9%)
- = Mean increase of 15.7%
- Tau-U (0.89, *p* < .05)

Group C

- Baseline (*M*= 76.0%)
- Intervention (*M*= 87.7%)
- = Mean increase of 11.7%
- Tau-U (1.0, *p* < .05)



Disruptive Behaviour

Group A

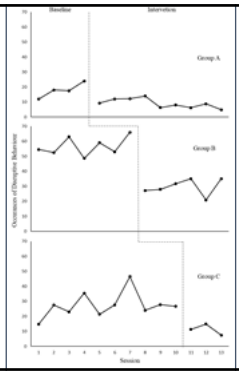
- Floor Effect
- Baseline (*M*= 17.9)
- Intervention (*M*= 9.1)
- = DB decreased by 49.1%.
- Tau-U (-0.89, *p* < .05)

Group B

- Baseline (*M*= 56.7)
- Intervention (*M*= 29.6)
- = DB decreased by 47.8%
- Tau-U (-1.0, *p* < .01)

Group C

- Baseline (*M*= 27.4)
- Intervention (*M*= 11.1)
- = DB decreased by 59.5%
- Tau-U (-0.93, *p* < .05)



Social Validity Data

Informal Interviews/Discussion

- 14 out of the 15 students reported that they preferred Bodyfurn chairs over the regular classroom chairs.
- 13 out of 15 students felt Bodyfurn chairs made it easier to do their schoolwork, while one student felt it made no difference.
- Reasons why students preferred Bodyfurn chairs included increased comfort, stability, safety and efficacy. Most students felt that these factors made it easier to concentrate on their schoolwork, and therefore easier stay on-task and less likely to be distracted by other students.
- Reasons why students preferred the regular classroom chairs included the colour and that the ability to rock back on the regular chairs.

Impact of Bodyfurn Chairs on Learning

Do Bodyfurn chairs improve learning in the Classrom?

- The findings in the study support the notion that Bodyfurn chairs can improve learning in the classroom.

On-Task and Disruptive Behaviour

- The results of this study show Bodyfurn chairs increase on-task behaviour and decrease disruptive behaviour of students in comparison to the regular classroom chairs.

Social Validity Data

- The social validity data collected in the study found that majority students had greater perception and satisfaction with Bodyfurn chairs over the regular classroom chairs, indicating that Bodyurn chairs would improve academic achievement of students.

Future Directions/Improvements?

Bodyfurn Chairs

- Larger sample size and more test sessions.
- Include several different types of regular classroom chairs for comparison.
- Collect more in-depth social validity data.
- Include pre-post measures of academic achievement.