

**MINIBRIDGE RESEARCH
PROJECT
ST. PAUL'S PRIMARY SCHOOL
MANCHESTER**

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**REPORT OF MINIBRIDGE RESEARCH PROJECT
ST. PAUL'S C. OF E. PRIMARY SCHOOL, MANCHESTER**

SUMMARY

Bridge or a simpler version suitable for younger pupils called Minibridge has been taught recently as a voluntary activity in several schools across the country. This study aims to assess whether there are educational benefits for example in relation to maths, literacy, short term working memory, non verbal reasoning and social skills in

a group. Participants in this study were 30 pupils aged 9-11 at St. Paul's C of E Primary School in Manchester. Standardised assessments of maths, non verbal reasoning and working memory were carried out before and after a 32 week course of Minibridge. Questionnaires were completed after the course by participants, teachers and parents.

Results reveal that pupils who do the best in learning Minibridge also make significant gains in relation to maths and non verbal reasoning. These improvements were seen for pupils who had been assessed by their teachers across the general ability range, and were not exclusive to more able pupils. Pupil, teacher and parent reports suggest major benefits in relation to maths, non verbal reasoning, problem solving, ability to focus and concentrate, as well as a range of social and behavioural skills.

This has been a holistic experience that has had an impact on home as well as school life for all pupils. It is hoped that motivation will have transferred into school based activities in general.

Much pleasure and fun were experienced all round.

HEAD TEACHER'S COMMENTS

"I have been genuinely surprised and impressed by the way learning and playing Minibridge has engaged the attention and longstanding commitment of a very mixed but very typical group of high spirited inner city children. I'm sure the intellectual gains are matched by the social and behavioural benefits. It's also a very productive way of spending school lunchtimes! We are committed to maintaining and expanding our bridge club. I can confess that I have started to have bridge lessons too."

Don Berry.

INTRODUCTION

Bridge is a card game which has provided countless years of recreation and fun to many people. Those that play, or have attempted to learn, acknowledge that it is also intellectually challenging. The English Bridge Union (2002) cites evidence for a marked absence of Alzheimer's disease amongst senior citizens who play regularly and further evidence to show that bridge keeps the mind functioning properly (Clarkson - Smith and Hartley 1990).

There has been an increasing trend in this country and abroad for enthusiasts to introduce bridge to school pupils, often as part of an extra curricular programme at lunch breaks, or after school. Cottesloe Secondary School, Buckinghamshire, and Weelsby Primary School, Grimsby, have introduced a simpler form of bridge called Minibridge within the school timetable. Duckworth (2001), Grimsby Evening Telegraph (2000) and Damiani (2002) report that teachers at these schools and elsewhere have observed improvements in a number of skill areas which include:

- mental arithmetic
- social skills
- attention, memory and concentration

Weelsby School used SATs end of year tests to measure progress in mental arithmetic, but there was no control group.

The Times Education Supplement 2002 reported on a Cribbage Club run by the numeracy consultant for the East Brighton Education Action Zone at Falmer High School in Brighton. It was set up to help improve pupils' mental arithmetic skills and is seen to be a great success.

Within education circles recent developments in relation to developing thinking and learning skills include programmes to raise achievement based on developing the use of learning styles e.g. Riding et al (1998); thinking skills e.g. Cognitive Acceleration through Science Education Thinking Skills Programme (CASE), MENO Thinking Skills Programme; and Accelerated Learning (Smith et al 1999). These have had positive effects, and mirror skills learned in bridge. Research in relation to bridge is therefore timely.

In 2000 the English Bridge Union became interested to consider whether an independent study could demonstrate some scientific evidence for increased school achievement in those pupils learning Minibridge. It was hoped that this would also lend credibility in the definition of Bridge as a "mind sport". There are no known previous controlled studies, although some initial work has taken place and funding is being sought for research in the USA.

This paper summarises the methods and outcomes of an independent controlled small scale study carried out by an educational psychologist in U.K.

METHODS

The aim of the research is to explore whether the teaching of Minibridge to primary age pupils between the ages of 9-11 (Years 5 and 6), can benefit school performance, particularly in relation to:

- maths,
- literacy,
- short term working memory,
- non verbal reasoning,
- social skills in a group.

The research was carried out at St. Paul's C of E Primary School, Manchester Local Education Authority.

The research has 2 stages:

- a pilot study carried out in the last half of the summer term 2001
- a study carried out over the academic year 2001-2

The pilot study was used to explore and refine assessment techniques and provide initial data. The data obtained was exciting and confirmed the value of moving to stage 2. There was evidence for improvements in short term memory skills. Pupils enjoyed the sessions and were well motivated. Behaviour and social skills were

improved (Burman L.H. 2001). Due to internal school difficulties it was not possible to collect final data for maths and problem solving.

The main study explored the progress of a small research sample of 10 pupils who had opted to attend a Minibridge Course of 40 minutes a week on a Friday lunch time, alongside another 20 pupils, compared with a matched control group of 10 pupils who did not attend. Their progress was measured by:

- standardised attainment and cognitive tests administered to research sample and control group;
- questionnaires administered at the end of the course to all the pupils attending the bridge club, their teachers and parents;
- a group interview with class teachers and the bridge teaching team;
- further individual interviews with the pupils in the sample;

Due to the small sample size some emphasis is given to qualitative methods of assessment and interpretation.

The following standardised tests for the appropriate age group were administered in the week before and after the course to the research sample and control group.

National Foundation For Educational Research - Nelson Tests (NFER-Nelson)

Non Verbal Reasoning Test 10, 11

Mathematics 7-11 Maths 10

Mathematics 7-11 Maths 11

These written group tests were administered by school staff during school time.

Wechsler Intelligence Scales For Children Sub test

Digit Span

Auditory short term and working memory

This test has 2 components:

digits forwards when the student has to remember an increasing list of numbers presented at a rate of 1 digit per second. **This measures short term memory retention,**

digits backwards when the student has to remember an increasing list of numbers presented **in reverse order. This measures working memory** that is, the ability to process and manipulate information.

The research team carried out these oral individual tests.

Scores were recorded for:

digits forward

digits backward

digits forwards and backwards combined.

The questionnaires were devised by talking to the bridge teachers about the skills that might be transferable in to the classroom, and from observations made during the pilot study.

The questionnaires covered the following areas:

Attainments:

- maths : computation and mental arithmetic
- reading for information
- speaking and listening

Cognitive skills:

- problem solving and thinking skills
- concentration and memory

Behaviour:

- ability to cope with difficulty in a learning situation
- behaviour in and out of class

Social skills:

- development of friendships
- ability to work with a partner
- team work
- ability to follow rules
- ability to allow opponents to play without disruption
- ability to be a good winner or loser

Motivation and enjoyment

Similar questionnaires were given to pupils, teachers and parents so that the results could be compared.

Questions included a 3 point rating scale:

1 = no change

2 = some improvement

3 = much improved

Additional comments were invited.

The questionnaires were completed by participating pupils, parents and teachers.

The percentage of scores suggesting some improvement and much improvement were calculated.

A percentage was calculated for:

the combined scores for some improvement and much improved
much improved only.

Minibridge Tournament

A Minibridge Tournament was held from mid-November onwards and a record of scores was kept. A ranking was obtained. This information was used to inform the bridge teachers of the children making most progress, and to help in the interpretation of outcome data.

Size of Minibridge Class

The original intention had been to keep the Minibridge class to a size of about 16 pupils in order to give each child maximum attention. The club attracted so much interest that new children continued applying to attend. In the end the class size was capped and reduced to 30. From mid-November onwards the Minibridge Tournament was the main activity in order to cater for the increased number of pupils without additional Minibridge teaching staff. Teaching did not take place to the depth that was originally planned, and this might have had an effect on the outcomes.

RESULTS

Minibridge Tournament

The standardised test scores were compared for the pupils who achieved the best Tournament scores. These coincided with the highest achieving pupils in maths and non verbal reasoning.

The 2 top scoring pupils were not in the experimental group, but **had been identified as pupils with behavioural difficulties in school**. They behaved well, and demonstrated their potential ability through an activity that they may not have perceived as “school oriented”.

Standardised Assessments

Maths

NFER Tests

Improvements of scores were compared between the experimental group and control group. In the experimental group 6 pupils achieved a statistically significant increase in standardised score of 10 points or more compared with 4 in the control group. The largest improvement of 19 raw score points was gained by a member of the experimental group. The pupils who achieved the most gains were those that had been most successful in learning to play bridge and in the Bridge Tournament.

Non Verbal Reasoning

Improvements of scores were compared between the experimental group and control group. In the experimental group 4 pupils achieved an increase in standard score of 10 points or more compared with 2 in the control group. The largest improvement of 14 and 16 points was gained by 2 members of the experimental group. These pupils were among the top scorers in the Bridge tournament.

Working Memory

Results were analysed for digits forwards and backwards separately and combined. None of the permutations reached significance in either the experimental or control group. There was a tendency towards significance in the experimental group for digits forwards and reversed combined in that the 2 highest raw score differences of 4 and 6 points, and standard score difference of 5, were recorded. In the pilot study experimental group there were significant differences in digits forwards for 4 out of 10 pupils.

Discussion

Benefits appear to have been obtained in **maths and non verbal reasoning** for those pupils who had been the most successful at learning to play bridge as evidenced by the Bridge tournament. These results were obtained across the general ability range of pupils and were not therefore related to teacher identified ability levels.

Questionnaires

Responses were obtained for 17 out of 30 pupils representing a 56 % response rate

3	3 teachers	100%
7	30 parents	23%

The above represent reasonable response rates.

Attainments

**Maths :
Computation**

Maths computation	% change (improved + much improved)	% much improved
Pupils	47	0
Teachers	100	0
Parents	71	15

Pupils were more or less equally spread in their views with 47 % suggesting some improvement, and the rest no improvement. Comments included:

Adding scores has helped me with addition work, (2)
I find it easier;
It really helps me to add up.

100% of teachers noted some improvement although it was observed that it is difficult to measure the specific impact separately from the work carried out by themselves during the year.

71% of parents noticed change, with 15% observing much improvement

Mental arithmetic

Mental arithmetic	% change (improved + much improved)	% much improved
Pupils	94	35
Teachers	100	60
Parents	71	15

94% of pupils noticed some improvement and 35 % of these noting much improvement:

I think I've really developed in this;
 I think quicker;
 Teacher says my mental arithmetic has improved.

100% of teachers noticed some improvement with 60% of these noting much improvement.

71% of parents noticed change, with 15% of these observing much improvement:

Trying;
 He likes maths and it seems that he can answer more quickly than before.

Reading For Information

Reading for information	% change (improved + much improved)	% much improved
Pupil	5	0
Teacher: not administered	-	-
Parent	71	29

Most pupils did not notice any change.

Parents however did:

He was not one for reading but he has started to love reading.

Speaking and listening

Speaking and listening	% change (improved + much improved)	% much improved
Pupils	94	0
Teachers	100	100
Parents	86	43

Most pupils noticed some change:

More confident speaking in whole class;
 Have to help partner, and listen to other ideas.

100% of teachers thought there was much improvement:

Much better co-operation and designating responsibilities without teacher support.

Parents also saw improvements with an equal number recording some improvement, or much improvement.

Cognitive Skills

Problem Solving and Thinking Skills

Problem solving and thinking	% change (improved + much improved)	% much improved
Pupils	94	0
Teachers	0	0
Parents	71	43

94% pupils noticed some improvement:

You have to think with care about what team member is doing, and other teams;
Improved logic skills.

Parents appear to support this with 71 % noticing some improvement and 43% of these noticing much improvement:

Good improvement;
We work like this at home;

This does not appear to be borne out by the teachers however, who notice no change:

We have not done many problem solving tasks, but those which we have done don't show change.

Ability to classify, organise and sequence information.

Ability to classify, organise and sequence information.	% change (improved + much improved)	% much improved
Pupils	35	0
Teachers	0	0
Parents	29	15

Pupils noticed some improvements with a 35% response, but a greater percentage 75%, did not notice a change.

Parents noticed some changes with 29% observing some improvement , and 15% of these noticing much improvement:

Now she can do it well.

Teachers noticed no change in line with problem solving skills.

Focus On Tasks (concentrate on own activity, watch another).

Focus On Tasks	% change	% much improved
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	(improved + much improved)	
Pupils	94	88
Teachers	100	0
Parents	71	0

Much improvement was noticed with 94% noting improvement and 88% of these, much improved:

I have noticed I am better at this.

Teachers support this observation with 100% support for some improvement:

Don't get as frustrated, prepared to keep going at tasks and be patient.

Parents also note improvement with 71% observing some change:

Needs detailed explanations, then can complete most tasks.

Maintain concentration until the task is complete.

Maintain concentration until the task is complete.	% change (improved + much improved)	% much improved
Pupils	94	52
Teachers	100	0
Parents	71	29

Results are roughly consistent with Focus On Tasks.

94% pupils notice some change, 52% of these much improvement; 100% teachers notice some change; and 71% of parents notice some change with 29% much improvement:

Doing well;

Finds it hard to listen to the information at first, but once he starts concentrating on a task, then he will concentrate hard.

Behaviour

Ability to cope with difficulty in learning situations

Ability to cope with difficulty in learning situations.	% change (improved + much improved)	% much improved
Pupils	54	35
Teachers	100	0
Parents: not administered		

54% pupils perceive improvements, 35% of these much improvement.

I don't give up as easily
I learnt to persevere

100% teachers notice some change:

Don't get disheartened as easily.

Behaviour in and out of class.

Behaviour in and out of class.	% change (improved + much improved)	% much improved
Pupils	54	35
Teachers	0	0
Parents	43	15

54% pupils perceive improvements, 35% of these much improvement:

It's good to play at breaks.
Feel it has made the most difference at dinner times.
Keep out of trouble.

Whilst teachers do not score improved behaviour, their comments support the pupils' views that play time behaviour and in class free choice behaviour has been affected:

Except at free choice/wet play times when Minibridge is chosen by some. Keeps them quiet.

43% of parents notice some change with 15% much improvement.

Behaviour at home.

Behaviour at home.	% change (improved + much improved)	% much improved
Pupils: not administered		
Teachers: not administered		
Parents	43	29

43% of parents notice some change with 29% of these much improvement.

Social Skills

Development of friendships

Development of friendships.	% change (improved + much improved)	% much improved
Pupils	88	0
Teachers	100	0
Parents	29	15

88% pupils notice some change:

Have mixed with different children but no difference with teachers.
Helped meet people you don't normally play with.

100% teachers notice some change.

Improvements with each other; work with children that are outside their usual friendship group.

29% of parents notice some change with 15% much improvement.

Ability to work with a partner.

Ability to work with a partner.	% change (improved + much improved)	% much improved
Pupils	94	35
Teachers	100	0
Parents	71	15

94% pupils notice some change, 35% of these much improvement:

I've noticed that I work better with others now, and I've made friends.
A bit more arguing on mixed (gender) tables, but not bothered if offered a choice of gender at table (girl).

100% teachers notice some change and 71% of parents notice some change with 29% much improvement.

Ability to follow rules.

Ability to follow rules.	% change (improved + much improved)	% much improved
Pupils	35	0
Teachers: not administered		
Parents	57	29

35% pupils notice some change. 57% of parents notice some change with 29% much improvement. This is a relatively weak result.

Ability to allow opponents to play without disruption.

Ability to allow opponents to play without disruption	% change (improved + much improved)	% much improved
Pupils	94	5
Teachers	0	0
Parents	71	15

94% pupils notice some change, 5% of these much improvement:

Big improvement in attitude.
We play more fairly now.

Teachers did not notice this:

Still get annoyed at times especially football in the play ground.

71% of parents notice some change with 15% much improvement.

Ability to be a good winner and loser.

Ability to be a good winner and loser.	% change (improved + much improved)	% much improved
Pupils	94	41
Teachers	100	0
Parents	57	43

94% pupils notice some change, 41% of these much improvement. 100% teachers notice some change. 57% of parents notice some change with 43% much improvement.

Team work

Team work.	% change (improved + much improved)	% much improved
Pupils	94	0
Teachers	100	0
Parents	71	15

94% pupils notice some change:

Couldn't cooperate before, but can now.

100% teachers notice some change.

More supportive and tolerant towards peers.

71% of parents notice some change with 15% much improvement.

Motivation and enjoyment.

PUPILS	ENJOYED	O.K.	NOT ENJOYED
What did you think of the sessions	16	1	0

All the pupils either enjoyed the sessions or thought they were O.K.

Enjoyed learning about bridge, improved addition skills, enjoyed working as part of a team.

I have taught my family to play.

My granddad teaches me to play more difficult things.

I definitely want to carry on playing.

Really great to learn.

Fun (4);

Its exciting.

Makes me better at cards.

I love playing it all the time.

It's different to most card games because you're on a team;

It's educational

Bridge is cool;

Would definitely recommend it.

Teachers were not asked a specific question, but volunteered this response:

Thank you, the children have really enjoyed it. Very enthusiastic.

Lots of positive comments from parents.

PARENTS	YES	NO
Is your child enthusiastic about Minibridge?	7	0

Enjoys it and looks forward to it.

Plays it all the time.

He plays with his friends before school and he is teaching his Dad.

Very enthusiastic about this game and is always talking about it.

Very much so.

Yes!

PARENTS	YES	NO
Has your child asked whether you want to play?	4	2

But I don't know how.

I am not one for playing cards but he has got us all interested and we have bought him a book on bridge and he has enjoyed reading it, and wants to improve his game.

He has taught us-not just us but his grandparents too! Brilliant teacher and very patient when necessary!

PARENTS	YES	NO
Has your child played bridge at home?	5	2

With his friends.

He has been teaching other people and is really enjoying it.

On holiday in Spain we played bridge every night for several hours, and occasionally still do. Didn't need a TV!

Parents also made the following additional comments:

I hope the sessions continue.

Thank you for giving her the opportunity to play with the Bridge Club.

Thank you for your work.

He has really enjoyed the Bridge. I hope his enthusiasm has helped him in lots of other educational areas, but basically we've all had a really good time playing – great fun.

DISCUSSION

Teaching Issues.

The classes were a great success and drew interest from more pupils than had originally been envisaged. There were insufficient teachers to provide individualised attention, and this may have affected the overall quality of learning.

Standardised Assessments

Pupils who are most successful at learning bridge as indicated in the Minbridge Tournament showed significant gains in maths and non verbal reasoning. These improvements were seen for pupils who had been assessed by their teachers across the general ability range, and were not exclusive to more able pupils. Unfortunately the school were unable to provide SATs data on mental arithmetic for the end of Y4, Y5 and Y6. This might also have provided some useful information.

In this study data for an increase in working memory was not obtained.

Comparison with the control group did not yield statistically significant results. This may have been because of the small sample size in which the success of the more able bridge players was neutralised by the weaker scores of those who had not learnt so well. This observation suggests that future small scale studies might be better to consider an unmatched sample design concentrating on following up those pupils who learnt Minibridge well.

Questionnaires

Positive results were obtained from the questionnaire format. Whilst acknowledging some of the difficulty teachers had in separating progress out from general learning in school, teachers, pupils and parents indicated a high measure of improvement in a variety of skills for all pupils.

The following areas received a high level of positive statements in roughly the order presented. Those recorded on the same line had the same percentage of responses. The nature of the administration of the questionnaires across 3 different consumer groups makes it impossible to be absolutely definite about this order:

Focus on tasks.

Maintain concentration until task is complete.

Ability to be a good winner/loser.

Mental arithmetic. Ability to work with a partner.

Behaviour in and out of class.

Ability to play with a partner without causing disruption.

Team work. Problem solving and thinking skills. Speaking and listening skills.

Development of friendships

Ability to cope with difficulty in a learning situation.

Those areas receiving a weak response include:

Reading for information.

Ability to classify, organise and sequence information.

Ability to follow rules.

No particular area is highlighted for lack of improvement.

The motivation and enjoyment that the pupils experienced shine out from all the results. It is notable that 2 of the most successful pupils at learning bridge had been identified with behaviour difficulties that had affected their access to the school based curriculum. This has been a holistic experience that has had an impact on home as well as school life for all pupils. It is hoped that this motivation will have transferred into school based activities in general.

Suggestions for future studies

The observations made in the study suggest it would be productive to extend the scope of the project by:

- a larger scale study;
- consider different research design e.g. randomised with no control group;
- consideration of more variables e.g. benefits according to gender, multicultural dimensions, pupils with behaviour difficulties, pupils with learning difficulties;
- further development of qualitative information through detailed case studies;
- staffing to allow for one Minibridge teacher to two tables to make even better progress.

This topic would lend itself well to a funded university research project via either an MSc. or PhD, possibly within the departments of Education, Psychology or Educational Psychology.

CONCLUSIONS

Standardised data was obtained to show that pupils who do the best in learning Minibridge also make gains in relation to maths and non verbal reasoning. These improvements were seen for pupils who had been assessed by their teachers across the general ability range, and were not exclusive to more able pupils.

Pupil, teacher and parent reports obtained from questionnaires suggest benefits to all pupils in relation to maths, non verbal reasoning, problem solving, and ability to focus and concentrate, as well as a range of social and behavioural skills.

This has been a holistic experience that has had an impact on home as well as school life for all pupils. It is hoped that this motivation will have transferred into school based activities in general. There are signs that there may be particular benefits for pupils with emotional and behavioural difficulties, or for those who have had difficulty with application to school based tasks.

These important results were obtained from a small scale study. Further studies are warranted in order to explore these exciting indications and obtain more detail. This topic would lend itself well to a funded university research project via either an MSc. or PhD, possibly within the departments of Education, Psychology or Educational Psychology.

Leah H Burman
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APPENDICES

EXPERIMENTAL GROUP Standardised data

PUPILS	AGE	Y	MA			NVR			MEM			
			pre	post	diff	pre	post	diff	pre	post	diff	
		5	105	117	12	122	122		11	10		
		5	94	99		86	102	16	9	9		
		5	93	106	13	92	106	14	8	9	1	
		5	109	122	13	103	114	11				
		5	98	103		85	81		6	7	1	
		6	88	85		84	95	11	10	9		
		6	89	104	15	87	88		12	17	5	

		6	109	115	16		114	102			11	14	3	
		6	113	110			97	90			10	7		
		6	116	131	15		123	130			7	8	1	
TOTALS			1014	1092			993	1030			84	90		
AVERAGE			101.4	109.2	7.8		99.3	103	3.7		9.3	10	0.7	
Difference from control					0.6				-0.4				0.0	

CONTROL GROUP Standardised data

PUPILS	AGE	Y	MA			NVR			MEM					
			pre	post	diff	pre	post	diff	pre	post	diff			
		5	120	135	15		124	125			10	12	2	
		5	70	92	22		91	81			7	6		
		5	70	90	20		93	104	11		4	7	3	
		5	120	128			130	128			10	12	2	
		6	120	119			104	110			10	12	2	
		6	105	118	13		113	126	13		11	8		
		6	139	133			125	134			10	10		
		6	97	88			98	107			11	10		
		6	96	99			106	106			6	8		

TOTALS			937	1002			984	1021			79	85	
AVERAGE			104.1	111.3	7.23		109.3	113.4	4.14		8.7	9.4	0.7

REFERENCES

Adey. P. and Shayer. M. *Cognitive Acceleration through Science Education Thinking Skills Programme (CASE)*. Kings College, University Of London.

Burman. L.H (2001). *Report of Minibridge Pilot research Project, St. Paul's C. of E. Primary School, Manchester*. English Bridge Union.

Clarkson Smith L. and Hartley A.(1990) *Journal Of Gerontology; Psychological Sciences* Vol 45 No. 6 p 233-238.

Damiani. J. (2002) *World Bridge Federation Press Release*

Duckworth.C. (July 2001) *Young Bridge: Newsletter*, English Bridge Union

English Bridge Union (2002) *Spirit of Friendship Festival –Manchester*
 Grimsby Evening Telegraph (2000) *Grimsby's Youth Today*

MENO Thinking Skills Programme (For Higher Education). University of Cambridge, 1993.

Riding, R.J and Rayner, S. (1998) *Cognitive Styles and Learning Strategies*. London: David Fulton Publishers.

Smith. A., Call, C. and Batton J. (1999) *The ALPS Approach : Accelerated Learning in Primary Schools* (revised edition) Stafford: Network Educational Press Ltd.

Times Education Supplement. (2002) *It's a Deal Curriculum Special* January 18

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