

Explicit teaching in vocabulary development using synonyms to year 3 and 4 students assists in developing comprehension at the whole text level.

Abstract

This study aims to investigate the teaching of word meanings and synonyms to a group of children in grades 3 and 4 and by doing so will lead them to improved literal comprehension of simple texts.

The OXO design was used. Information was gathered by myself and classroom teachers. A sequence of 8 sessions was set aside (2 being for pre and post testing). A total of 18 students aged between 8 and 10 and were chosen from grades 3 & 4 and then divided into a two groups: a testing group and a control group – this division was done with considerable discussion with the relevant classroom teachers. The Testing group participated in all 9 sessions and the Control group participated in only pre and post testing.

This study aims to show that the explicit teaching in vocabulary development using synonyms will improve in developing comprehension at the whole text level.

This study also aims to demonstrate that even with a small amount of concentrated intervention improvements can occur with most children who are given this opportunity of intervention. The study doesn't however illustrate if the improvements can be maintained over a longer period of time and if the strategies are then consistently used by students, further studies need to be undertaken to check this.

Introduction

Many children experiencing difficulties in reading are unable to make synonym connections thereby making it difficult for them to understand the text that they are reading. The processing demands on the struggling reader make it difficult for them to not only use the decoding process but often the words they come across though appear simple to others they make little correlation to already known words. Their lack on vocabulary knowledge reduces their ability to become successful in the classroom.

A common thread in recent research indicates that the extent of students' vocabulary knowledge relates strongly to their reading comprehension and overall academic success. (Baumann, Kame'euni & Ash 2003) This lack of academic success then seems to extend to other subjects and extends out to their own self efficacy.

Understanding vocabulary and what words mean seems to be an integral part missing from many struggling readers. They don't question what a word means when they come to the unknown word as they don't want to be seen as inadequate in a group situation. Their self efficacy appears to wane as the text they are confronted with become harder. The struggling reader becomes disillusioned with their own abilities and the inadequacies seem to get bigger as they rise through school. We need to teach them that asking questions and finding out when preparing to read makes a big difference to their feeling of success in reading

It can be said that in the junior classrooms that we as teachers rush the children to be able to decode at level 28 before the end of grade 2 however, there seems to be a lack of comprehension in many of the students who then enter grade 3. The CLaSS (Children's Literacy Success Strategy) developed by Professor Peter Hill and Ms Carmel Crévola has indeed improved the literacy levels of the children in Catholic Schools, however from school experience there does seem to be a lack of success with struggling readers within the area of their comprehension. They are able to pass the observational survey test at level 28 but many of these students continue to have difficulty understanding the texts that they are reading.

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Children encountering difficulties with reading comprehension do not use the same skills they see and use in whole CLaSS shared activity. They are not incorporating what they already know to unknown texts. In grades 5 and 6 the children undertaking the Middle Years Literacy Project use mainstream text that are enlarged to scaffold their preparation to read the text. These skills in preparation can then be used in all other disciplines. Smith who cites Kueker (1990) suggests that pre reading activities are good at assisting in understanding texts. This step is essential particularly for the readers who have been struggling in understanding texts. Pre reading activities can only benefit the student so the “tuning in” must include building up background knowledge of the words that will be used in the texts as well discussion as to what the topic is about. Christen and Murphy (1991) say that research indicates that new information must be integrated with what the learner already knows. Teaching students how to prepare for any text that they need to read enables them to tackle the text and get as much meaning from it as they can. Using this idea of Middle Years in preparing the reader to “unpack” the text by using synonyms to make sense of words that they don’t know and to make connections so that they make sense of the text could easily be used in the lower grades as well. The expectation that many teachers have is that the students understand all the texts placed in front of them - a child who can read level 28 should be able to understand the text!

Therefore it is necessary to teach learning strategies – Parker (2002) stated that teaching learning strategies is beneficial to students as it is teaching them how to learn, rather than teaching specific content or curriculum. Teaching the strategies often and consistently so that the struggling reader finally adopts the method can only benefit them as they read various texts both in the classroom and in everyday activities. Struggling readers need to consistently manage their reading strategy until it becomes a natural activity that they do every time they read.

Method

This study uses an OXO design. The study monitors year 3 & 4 students' gain in word reading knowledge in explicitly teaching how to use synonyms and teach strategies to work out unknown words in text. The children from year 3 & 4 were chosen for this study because the classroom teachers were concerned that their literacy score results from ongoing classroom testing had not improved greatly in the last 6 months or the students did not appear to have accelerated similarly to the rest of the year 3 & 4 students. Testing Scores from Probe were used as well as formal testing of the students was implemented and an analysis of the data carried out. An action plan was designed and implemented followed by further testing and analysis to determine the gains made by the students after the completion of explicit teaching and intervention in extending their synonym knowledge and strategies were implemented.

Participants

The participants for this study were in total 18 children ranging from 8 to 10 years of age. All students bar one have attended the same Catholic Primary School since beginning school in Prep and all these students who have been identified by their classroom teachers as having reading difficulties since the beginning of this year. All students come from a middle class socio economic background with only one child having been identified with learning and emotional difficulties prior to entrance to school. No students were identified as having EMA's. All students are in a Year 3 and 4 and are in composite grades of 29, they are spread over 3 different classes. All students have English as their first language bar one only one student was listed as ESL though many of the others are now second and third generation ESL. In the past the Classroom Teachers and Reading Recovery Teachers have identified that a reading difficulty for most of these students have had, is with word meaning in texts. This year all year 3 & 4 teachers were concerned with the students Probe Reading scores as well as all the students scoring

below 50 in the BURT word recognition test. Though the students were of course making some progress, the classroom teachers were concerned that the progress had not markedly improved since first term. The classroom teachers were concerned for these students and wanted to identify the possible reasons for the continual lack of word knowledge and why they are unable to make sense of the text that they were reading what strategies they as teachers could use to assist these students.

In the Testing group there were 5 boys and 4 girls from Years 3 & 4 and all successfully completed the Reading Recovery Program in when they were in Year 1. Only 2 students in this group were not part of the Reading Recovery program. It appears that due to the scores and ages of other students these two students were not able to be seen by Reading Recovery in that year.

In the control Group there were 8 boys and 1 girl in this group only 2 had Reading Recovery in Grade 1. The remaining students have all had Individual Educational Plans in place and have been reviewed every term.

It is important to note that during this time to mention that student 2 in the testing group was being assessed by outside agencies in regards to learning difficulties and the students' results in both pre and post test also reflect the agency results.

Student 2 also was the only child who had been identified with both social and emotional difficulties before entering school. However, it is also important to note that though the child had been tested both in school and with outside agencies with specific learning difficulties highlighted the parents do not believe that the difficulties will be ongoing and that they can be fixed instantly.

The following Chart outlines information about the 2 groups, (Testing and Control) that were involved in the study.

TESTING GROUP

Name:	Age in months	ESL	Prior Intervention	Probe Reading Age Set No Pre -	Probe Results Reading comprehension percentage	BURT Raw Score	Sensory impairment
Student 1	123 X		X	4	85%	34	X
Student 2	112 X		√	3	83%	42 X	
Student 3	105 X		√	4	57%	35 Glasses	
Student 4	115 X		√	6	75%	47 Glasses	
Student 5	111 X		√	7	75%	57 X	
Student 6	90	√	X	3	83%	48	X
Student 7	108 X		√	3	83%	42 X	
Student 8	118 X		√	7	62%	43 X	
Student 9	103 X		√	3	66%	41 X	

CONTROL GROUP

Name:	Age in months	ESL	Prior Intervention	Probe Reading Age Set No Pre -	Probe Results Reading comprehension percentage	BURT Raw Score	Sensory impairment
Student 10	106 X		X	7	62%	48	X
Student 11	99 X		X	7	50%	46	X
Student 12	102 X		X	4	71%	59	X
Student 13	107 X		√	11	87%	46 X	
Student 14	111 X X 10		70%			71 X	
Student 15	99 X		X	7	50%	52	X
Student 16	114 X		X	6	37%	61	X
Student 17	113 X		X	8	75%	58	X
Student 18	116 X		√	10	90%	72 X	

It is interesting to note that as the information from the chart was collated that the children chosen by the teachers all bar one scored below 50 on the BURT raw data, no higher than 7 in the probe reading age and all bar two had Reading Recovery as prior intervention.

Materials

Materials used during teaching:

Synonym Snap Game – Lewis & Lewis Language Support Program

Synonym Cross Word – Lewis & Lewis Language Support Program

Synonym Test – John Munro 2005

Probe Test – (Completed by Classroom Teachers)

Teacher invented text using the words for Synonym Swaps

Extract from “Blabbermouth” by Morris Gleitzman

Whiteboard/ markers/ student pencils

Scissors and glue

Paper

Procedure

All students were Pre and Post tested in a whole group situation and then divided into two groups – The testing group which I saw regularly and for 9 sessions in total and the Control group which was only seen twice for pre and post testing.

The sessions that were administered consisted of 7 lessons (not including Pre and Post testing) duration of each session was 30 – 45 minutes.

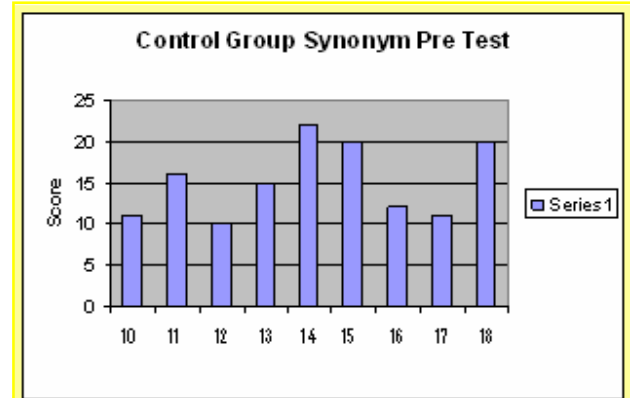
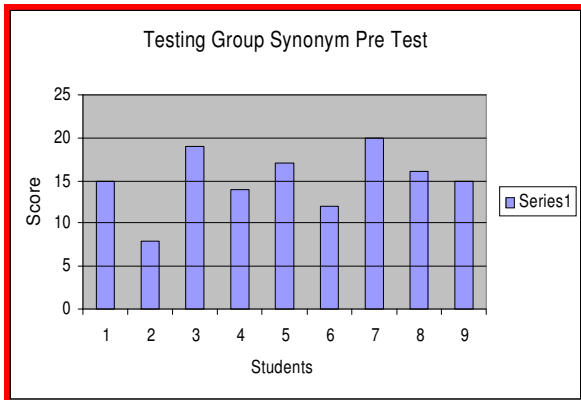
The sessions were conducted in the school hall usually after lunch which was at the request of the students’ classroom teachers and on occasion we had to share the hall with the PE teacher who was conducting lessons on skipping.

The students were very co operative during these sessions and were very animated in their discussions of vocabulary and synonyms. It was important that the students no matter what their answer they were given positive feedback so that they felt comfortable to share their responses even if they did make an error in synonym usage.

Session	Goal of Session	Teaching Activity	Student Activity	Monitoring task used
Pre Test	To test all the children both Testing group and Control group.	Administer the test	Complete the test	John Munro Synonym Test
1	To recognize the difference b/w synonyms and antonyms	Play synonym snap	Play synonym snap and discuss at the end the matches made.	Synonym Snap by Lewis & Lewis Language Support Program
2	To use the words from synonym snap and find out why they are matches – what other words can we add to them	Using the white board the children take a word and match it with the ones already on the whiteboard – with a whiteboard marker add more synonyms beside each one.	Match the words already on white board and discuss what other words can be added to them.	Synonym Snap by Lewis & Lewis Language Support Program. Using the words listed in the previous snap game.
3- 4	Rewording short pieces of text.	Using enlarged copies of short pieces of text children help find synonyms for the underlined words within the text.	Children discuss with teacher possible synonyms for the words underlined in the text. In the second lesson children can then complete the same activity on their own.	Teacher created short piece of text.
5 -6	Pre-reading Strategy – what do we do when we have to read something we haven't seen before	Using enlarged piece of text from Blabbermouth. Go through the steps we need to understand the text.	Children brainstorm with the teacher what things we need to do	Morris Gleitzman – Blabbermouth extract only.
7	Simple Synonym Crossword	To discuss with children how we can work out the words that are needed in activities such as crosswords.	Children each given their own crossword sheet and they complete. All answers discussed at the end of session.	Synonym Crossword by Lewis & Lewis Language Support Program.
Post Test	To test all the children both Testing group and Control group.	Administer the test	Complete the test	John Munro Synonym Test

Results

The results have been shown in two parts the testing group and then control group in the pre test results and then combined students in both pre and post test results.

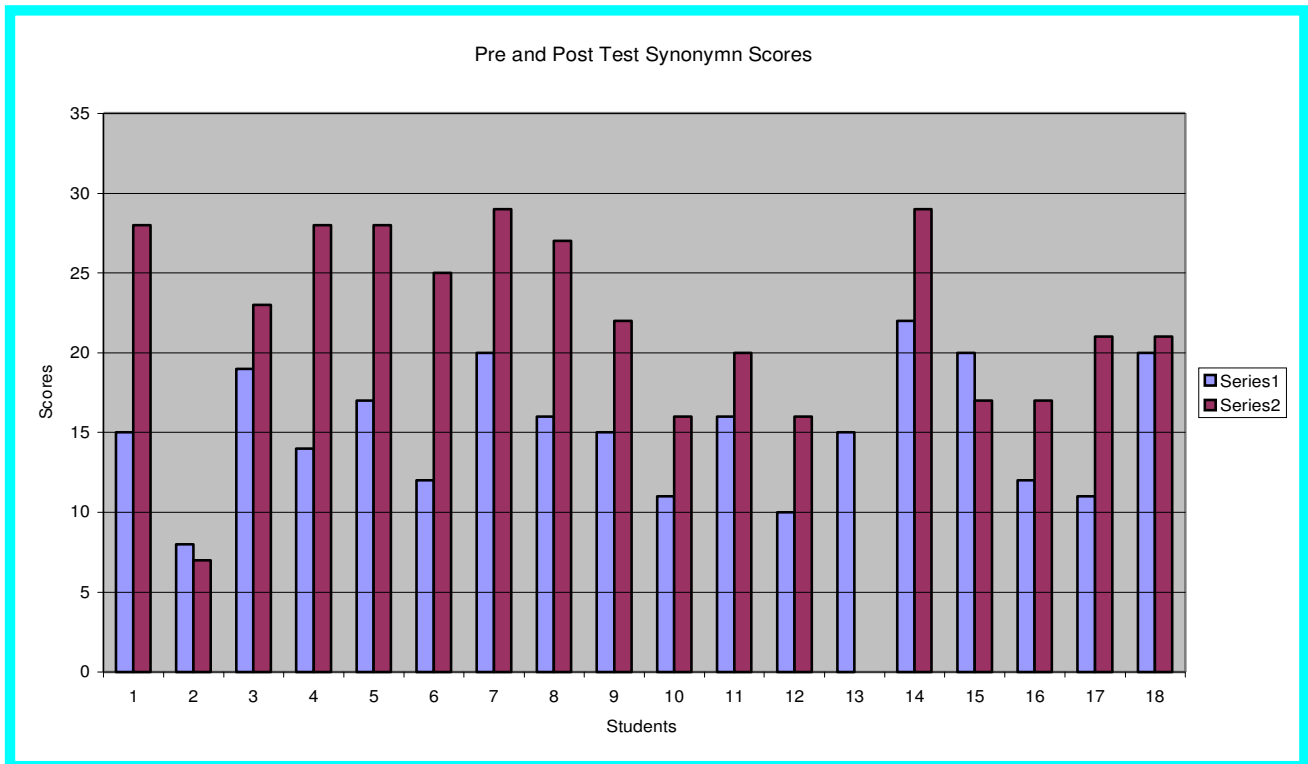


In the testing group the average score for the synonym pre test was 15.1 the highest score was student 7 with 20 and the lowest score was student 2 with a score of 8. Student 2 was identified with learning disabilities (including social and emotional) – during the sessions this student required more explanation on synonyms as the results sheet showed that they were always giving antonyms as answers.

It was also interesting to note that the students left many words such as fatigued and a building and only entered in one answer or no answer for many of the words listed.

In the control group the average score was also very similar to the testing group the average score was 15.2 with student 12 scoring the lowest of 10 and the highest was Student 14 with 22. Here too the students left many words such as fatigued and a building giving no answer and then only submitting one answer for many of the words listed.

Both groups demonstrated very similar results in the pretest activity. It therefore showed that the students chosen were very similar in literacy needs.



Results from Pre and Post test scores by both the testing group and the control group. Students 1 – 9 in the Testing group and students 10 -18 were in the control group. The students 1-9 made significant improvements in the synonym score. They were far more understanding of synonyms and this time were able to answer far more than they did in the first test. This is reflected in their scores.

The average score in the post test with the testing group was 26 a marked improvement from the original average score of 15.1. This considerable increase was unexpected. The increase of 10.9 was much greater than anticipated. The average score for the control group in the post test was 17.4 this was only an improvement of only 2.2 from the pre test average score of 15.2

The post test also did not take as long as the first time the children sat the test. The testing group seemed very relaxed as they underwent the test. The Control group also were quick to respond as they felt comfortable redoing something they had already seen.

Within the testing group the only child who did not improve was Student 2 who actually decreased her score by 1. This was not surprising as this also reflected her results from official testing with outside agencies. Though much more time was taken in discussion and teaching with this student the results did not reflect any growth in understanding of synonym and word meanings in general.

Most marked improvement was student 4 who increased their responses by 14 doubling their original score.

Two students, student 1 and 6 increased their scores by a total of 13 words each. Students 5 and 8 increased their scores by 11 more words.

Within the Control group the scores there was one markedly improved score with student 17 increasing their words by 10.

Student 15 also decreased their score by 3 – upon further investigation it seems that the student did not answer with multiple responses for the same words that they did in the pre test.

Unfortunately, student 13 was absent from the post score testing and therefore his score was 0 for the post test. We were unable to find another time for him to take the test again. This was one of the confounding variables that needed to be considered when analyzing the results. Student absences, swimming program and National Testing NAPLAN were also variables that made consistency difficult.

Another confounding variable was the lack of space to work in. A number of times the lessons had to be shared in a school hall which was at the same time being used by the Physical Education teacher.

However, even with these confounding variables it can be said that the results from the testing group did not appear to decrease because of them.

Discussion

The results clearly state that even with a small concentrated effort of the explicit teaching students can improve their vocabulary development using synonyms in improving their development of comprehension at the whole text level.

The marked improvement of the students in the testing group can be contributed to a number of different aspects.

Firstly they were clearly chosen for intervention purposes. They were chosen for the scores received on Probe as well as the classroom teacher concerns on their struggle with reading and text comprehension.

Secondly the students and the teacher developed a very comfortable rapport that enabled them to feel successful. This enabled the sessions though at times distracting (in the hall at the same time as PE classes) to still be useful. This comfortable rapport with the teacher increased their own self efficacy and this enabled them to feel comfortable in extending themselves into unknown territory. They were able to “give it a go” without the ramifications of other more able students.

Surprisingly the students once they caught on that they were looking at synonyms would often even in the corridor approach the teacher to let them know that this word can also mean this too. They were excited by learning new words and making those connections. The classroom teachers also noted that the testing group appeared to be more interested in the simple texts that they were given. This was a positive outcome for the students in this group which enabled them to feel successful in their efforts.

Also the specific nature of the lessons was also of benefit to these students. The fun aspect of both the Synonym Snap and the Synonym Crossword (Lewis & Lewis) were engaging, not necessarily having the teacher “talk” at them all time during a lesson. The fun nature allowed the children to interact and explore words with lots of freedom which often is not found in the classroom particularly in the “focus” groups that are part of the CLaSS classroom.

Though Student 2 in the testing group was the only child who did not improve and in fact slipped backwards by a point, I believe that with the continued intervention that will now take place this child too will slowly improve. As the concentrated short intervention for the majority was a success a long and sustained effort of intervention will assist student 2. Within the control group though their improvement was not as marked I believe that their classroom teachers and the child's' natural maturation will allow them to continue to improve.

The author of the study was not a classroom teacher and this concentrated intervention was only a short term measure it would be best suited for a classroom teacher to complete over a much longer period of time over the school year. The series of lessons undertaken could easily be extended and the "preparation of reading" taken further, to really enhance the strategy.

The children entering grade 3 can decode to level 28 but at the same time many of the struggling readers cannot understand the text that they are reading. Students therefore need to spend more time with this strategy as well as looking a how to work with vocabulary and by doing so it would be beneficial for the students who are experiencing difficulties with understanding texts to extend their vocabulary knowledge thus allowing them to make sense of the text that they need to read.

This study however, was in itself not long enough to test the hypothesis in a long term. Questions rise such as without further intervention of this testing group would they be able to maintain this enthusiasm they had begun with and would this continue to allow them to increase their knowledge of even more difficult texts. This of course would need to undertaken in further study.

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Materials:

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APPENDIX:

Lesson 1:

Aim: to recognize the difference between synonyms and antonyms.

Time: 30 – 40 minutes

Using the words from Synonym Snap write some of them on the whiteboard in the first of 3 columns.

In the second column children give you other words that mean the same.

In the third column children give you a word that means the opposite

Label the second column Synonym. Label the third Column Antonyms

Discuss with children the differences

Lesson 2:

Aim: to use the words from Synonym Snap and to find out why they are matches.

Time: 30-40 minutes

Using the words from Synonym Snap – blue tac them onto the whiteboard

Begin with matching words that belong together.

Discuss the match – why is it the same?

Give children a set of cards and they play Synonym Snap game. The winner aiming to get as many matches as possible.

Children replay game.

Lesson 3 & 4

Aim: to reword short pieces of text.

Time: 30 – 40 minutes

Using an enlarged piece of simple Text “ For Sale”

Read through with whole group underline specific words you wish to target.

Work through as a group the meaning of the first sentence and discuss the underlined word.

Choose a number of synonyms that would work in place of the underline word

Write out that sentence – does it still say the same as the original?

Lesson 4:

Using the same text as the previous lesson work on the next sentence together

Then allow the children time to complete the last two sentences.

Children share their results to the whole group.

Lesson 5 & 6

Aim: Preparing to read a text. Pre- Reading Strategy – Vocabulary Previews

Time: 30-40 minutes

Using an enlarged piece of text from “Blabbermouth” by Morris Gleitzman

Highlight words we don’t know –

Find Synonyms for the underlined words

Rephrase the sentence now using the new synonym – does it make sense.

These 2 lessons should be taught more than just twice.

Lesson 7:

Aim: To complete a synonym crossword.

Time: 30 – 40 minutes.

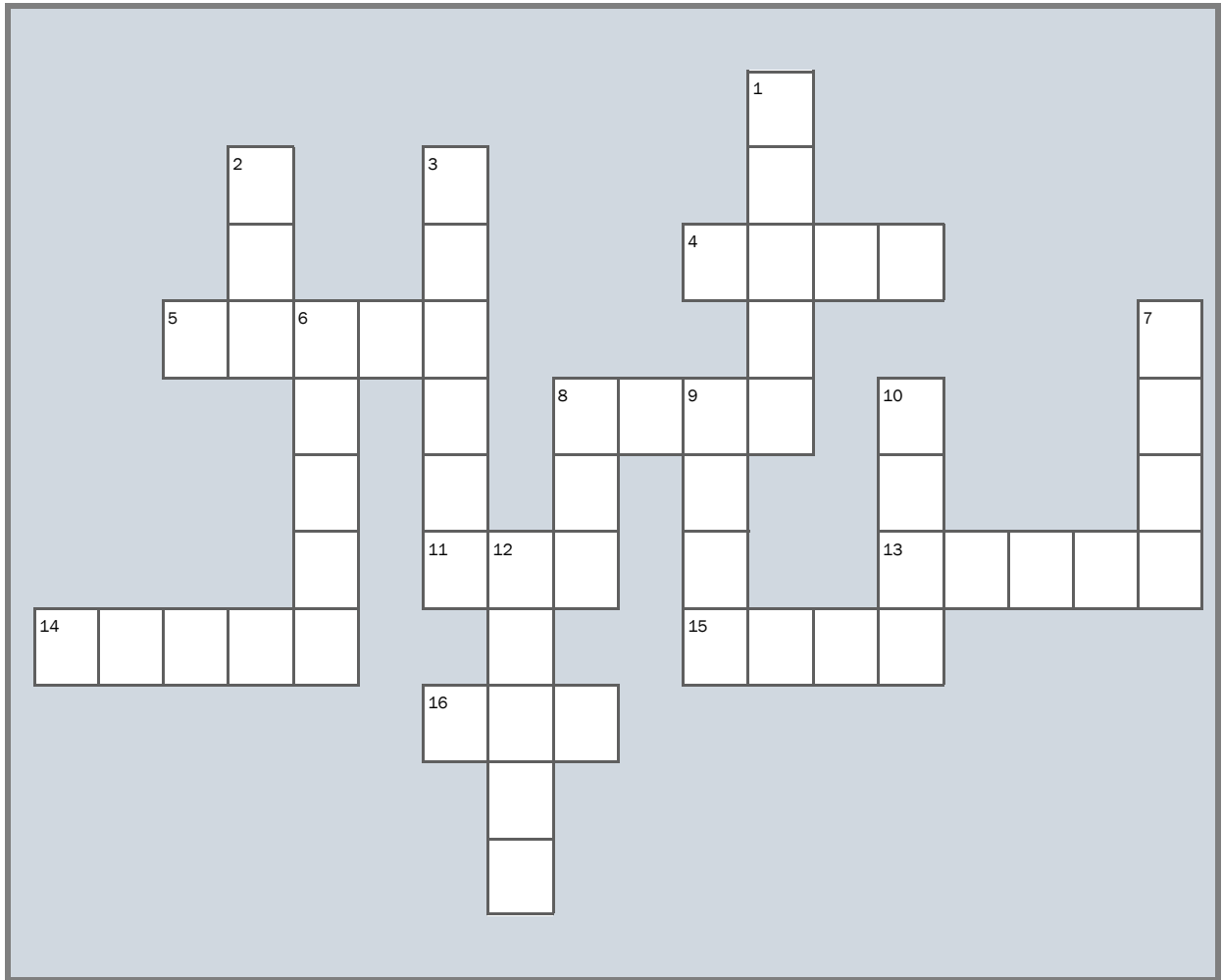
Look at the Clues for each word on Synonym Crossword

Discussion how can we work out the words – make a list of possible answers

Give each child their own crossword sheet to complete.

YN ONYM ACTIVITY SHEET

bigbig	largelarge	littlettle	smallsmall
hithit	bashbash	seese	looklook
nicenice	goodgood	fastfast	quickquick
sadsad	unhappyunhappy	aboveabove	overover
belowbelow	underunder	sicksick	illill
dirtydirty	soilsoil	icyicy	coldcold



Across

1. I keep my room 1. Ik.
2. Let's e pmk reading the book.
3. I can't go to school today because I'm m...
4. The TV show is about to ymkmro.
. I like to sit e k I2o the apple tree.
6. I'm so p.IL you came to my party.
7. We planted the seeds in the rtm..
8. The elephant at the zoo was very .I'p .

Down

1. You have to be yIr2 if you want to buy that new toy.
2. I eIro L my toe on the table leg.
3. The doghouse is rsI...
4. My mum gets sIL if my room is messy.
. The plane was flying Ieta the clouds.
6. The animals in the pet shop looked dkoIiin.
7. The weather was m1n when we went to the snow.
8. Can you 1.tr the door please.
9. The teacher said we were being too .tdL.

This crossword was created by Jo Hadusek & Bethany Ward (Lewis & Lewis) with EclipseCrossword - www.eclipsecrossword.com



Synonyms task - Group

John Munro

Administer the set of words below to a group of students. Say to the group: I am going to say some words. After I say each word, I want you to think of another word that says the same thing. I would like you to write the word you think of. You can take as long as you need. This is not a spelling test. If you are not sure of how to spell a word, just write down how you think it is spelt. In this task it doesn't matter if you write words incorrectly.

Go through the practice words below first. Then read each of the target words and ask the group to say write word that 'says the same thing'.

After the group has responded, ask "Remember to think of any other words that mean the same as...? Now write down any other words you can think of that mean the same thing as"

Use the 'Teacher's Sheet' to correct the students' responses. The words in the second column are possible synonyms.

DO NOT SAY ANY OF THE TARGET WORDS IN A SENTENCE. SIMPLY SAY THE WORD. REPEAT IT IF NECESSARY.

Practice: Thin. Write another word that says the same as thin. Acceptable answers would be skinny or slim. If the child gives a correct response, ask "Did you think of other words that also mean thin?"

If some children hesitate, say "You could say skinny or slim. Other words that say the same as thin are skinny or slim.

Here is another word. Dog. Write another word that says the same as dog. Acceptable answers would include puppy, hound, or terrier. If some children hesitate say "You could say puppy, hound, or terrier. Other words that say the same as dog, puppy, hound, or terrier.

Here is another word. Slide. Write another word that means the same as slide. Acceptable answers would be slip or skid. Repeat the instructions above.

Here is another word. Talk. Write another word that means the same as talk. Acceptable answers would be speak, natter, chat or say. Repeat the instructions above.

Instruction: Now have a go at each of these words. I will say a word and I want you to write another word that says the same thing. You can take as long as you want. If you don't hear a word that I say the first time, just tell me and I will say it again.

	Practice word	Possible correct responses
1.	thin	skinny or slim
2.	dog	puppy, hound, or terrier.
3.	slide slip or skid	
4.	talk	speak, natter, chat say

Synonyms task: Target words and possible responses

Teacher's Sheet

Target word		Possible correct responses
1.	small	tiny, little, wee, mini, miniature, short, shrimp, slight, stunted, teensy, minor, trifling
2.	fast	quick, rapid, brisk, snappy, speedy, hasty, swift
3.	old	aged, ancient, elderly, experienced, geriatric, senior, veteran, outdated, stale
4.	leave	go, clear out, scam, stop
5.	car	vehicle, automobile, sedan
6.	shoe	boot, slipper, runners, sneaker
7.	child	boy, girl, infant, tot, baby, youngster, brat, kid, kiddie, toddler
8.	fat	rotund, plump, overweight, burly, corpulent, obese, oversize, paunchy, portly, stout, blubbery, bulk, lard
9.	walk	stroll, amble, hike, march, pathway, amble, tramp
10.	cat	kitten, moggy, puss, leopard, lion, tabby
11.	fatigued	tired, all in, beat, exhausted, weary, worn-out, zonked, sapped
12.	boat	ship, types of boats
13.	clean	neat, tidy, clear, flawless, trim, sparkling
14.	sick	ill, unhealthy, unwell, weak, queasy, diseased,
15.	tiger	cat, cheetah, cougar, jaguar, leopard, lion, panther
16.	engine	motor machine, apparatus, appliance, gadget
17.	ignore	disregard, avoid, cut, neglect, omit, overlook, reject
18.	precious	expensive, dear, prized, treasured, valued, invaluable, prized
19.	angry	mad, irate, crazy, cross, out/enraged, fiery, fuming, furious, storming
20.	hit	slap, strike, punch, bat, smack, smash, sock, swipe, success, achievement, triumph
21.	give	donate, provide, contribute, dole out
22.	stop	prevent, bar, impede, halt, end, block, close, finish, terminate, rest, still
23.	cage	pen, cell, prison, enclosure, coop, cavity, chest
24.	adolescent	teenager, immature, juvenile, youthful, minor
25.	station	terminus, headquarters, stop, base, depot, terminal
26.	release	free, liberate, acquit, let go
27.	flow	run, move, drift, ooze, stream, abound, progress
28.	liberate	free, let out, loosen, release
29.	a building	a construction, edifice, home, house, dwelling, structure

Name	Teaching/ Control Group	Age in YEARS	Age in MONTHS	ESL ?	Earlier Intervention?	EMA	PROBE reading age	PROBE reading comprehe nsion %	BURT PRE	Synonym Pre Test Score	Synonym Post Test Score	Differenc es b/w per & post score
student 1	Teaching	10	123	0	0	0	4	85%	34	15	28	13
student 2	Teaching	9	112	0	1	0	3	83%	42	8	7	1
student 3	Teaching	9	105	0	1	0	4	57%	35	19	23	4
student 4	Teaching	10	115	0	1	0	6	75%	47	14	28	14
student 5	Teaching	10	111	0	1	0	7	75%	57	17	28	11
student 6	Teaching	8	90	1	0	0	3	83%	48	12	25	13
student 7	Teaching	10	108	0	1	0	3	83%	42	20	29	9
student 8	Teaching	10	118	0	1	0	7	62%	43	16	27	11
student 9	Teaching	9	103	0	1	0	3	66%	41	15	22	7
							4.444444	74%	43.22222	15.11111	26	9.222222
student 10	control	9	106	0	0	0	7	62%	48	11	16	5
student 11	control	8	99	0	0	0	7	50%	46	16	20	4
student 12	control	9	102	0	0	0	4	71%	59	10	16	6
student 13	control	9	107	0	1	0	11	87%	46	15	0	0
student 14	control	9	111	0	0	0	10	70%	71	22	29	7
student 15	control	8	99	0	0	0	7	50%	52	20	17	-3
student 16	control	10	114	0	0	0	6	37%	61	12	17	5
student 17	control	10	113	0	0	0	8	75%	58	11	21	10
student 18	control	10	116	0	1	0	10	90%	72	20	21	1
							7.777778	66%	57	15.22222	17.44444	