

Striking a Balance between Children's Need of Support and Parental Roles in Mathematics Homework

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The purpose of this article is to provide insights into parent-child engagement in mathematics homework of senior school children. A mixed-methods approach was employed in the study, utilising survey questionnaires and semi-structured interviews of eight parent-child dyads from three secondary schools in Melbourne. Data collection and analysis were guided by a conceptual framework developed using the findings in relevant literature. Results indicated that children are differentially responsive to parental roles in homework and excessive involvement is not always helpful.

Introduction

While involving parents in school activities has an important social and community function, it is the involvement of parents with their children's education at home that is most likely to result in a positive difference to academic outcomes. This involvement at home seems to differ with students' year level, subjects, and parents' perceptions. It is observed that some parents prefer more homework to keep their children busy with their studies while some parents prefer a break for their children to do extra-curricular activities. Parents have different intervention strategies and act differently when engaging with children's homework. Hence, it implies the necessity for further investigation of the factors that contribute to the development of parent-child relationship in education through which children's academic and cognitive outcomes can be affected. This paper, in particular, focuses on parents' involvement in senior school children's mathematics homework.

Literature

One of the most common, dominant, and controversial ways parents involve themselves with their children at home is by helping them with homework which is an important part of the daily lives of students and parents and can be viewed as a link between home and school (Moroni et al., 2015; Phillipson, 2013). Cooper (1989) defined homework as tasks assigned to students by school teachers that are meant to be carried out during non-school hours. He has argued that within reason, the more homework high school students do, the better their achievement and homework is less effective for primary school students. Wingard and Forsberg (2009) explained that every family with schoolchildren was affected by a complex set of variables with regard to parental involvement in homework on a daily basis. In the home learning environments, parents can engage in supervision and provide support with homework (Harris & Goodall, 2008). While homework provides an opportunity for students to consolidate and expand what they have learned at school (Kaur, 2011), it also helps parents to monitor and be involved in the education of their children. Especially, in Australia, parents believe that homework leads to academic success and they consider that homework teaches children about responsibility, to work independently, and to be better organized (Hallam, 2009). In a study drawing data from two large scale studies ($N = 1274$ and $N = 1911$) in Germany, Dumont et al. (2012) viewed parental homework involvement as a multidimensional construct. Three dimensions identified by them were perceived support, conflict, and parental competence. Their research found that perceived parental support and perceived parental competence to help with homework were positively related to the

academic achievement of students, while perceived parental homework interference and perceived homework-related conflict were negatively related to academic outcomes.

Several studies have identified and investigated factors that have been positively or negatively associated with students' homework. Wingard and Forsberg (2009) found that parents became involved in their children's homework in two ways, namely, involvement through anticipating and planning the activity of homework, and involvement by directly participating in the accomplishment of the homework task itself. These variables include a child's own willingness and orientation to do homework, the amount and type of homework the child receives, and the child's needs and expectations for homework help. Phillipson (2013) argued that direct help with homework and setting rules about homework completion improve academic achievement while homework assistance can exert excessive pressure on children, interfering with their autonomy and negatively affecting academic performance. With the data collected from 165 mother-child dyads in the USA, Hyde, Else-Quest, Alibali, Knuth, and Romberg (2006) argued that frequency of homework had a positive effect on mathematics achievement while length of homework had a negative effect for some students. These findings on frequency of homework were supported by Trautwein (2007) in a study on homework variables and achievement with 24,273 (Study 1) and 2,216 (Study 2) year 9 students in Germany. The study by Kashahu et al. (2014) found parental involvement with homework in both mathematics and native language studies had moderate positive effects on children's academic performance. The time parents spent helping their children with mathematics homework (Pezdek, Berry, & Renno, 2002) or the time students spent on homework (Trautwein, 2007) was unrelated to students' achievement. Even though direct involvement and guidance were positively related to students' achievement (Xu, 2004), monitoring of homework by parents was negatively related (Bempechat & Shernoff, 2012).

Overall, there are differences and inconsistencies in the previous studies and much research found in this area are centred on primary students. It appears that there are no large scale studies conducted in homework of secondary school students in Australia. Hence, it emerges the necessity and provides foundation to further research. This study was focused on the following research questions in relation to secondary school students and their parents and has been conducted in the Australian context.

How do parents involve themselves in mathematics homework of their secondary school children? How do children perceive such involvement of their parents?

Research Method

The motivation to explore parents' involvement in the mathematics homework of children followed the exploration of concepts related to parents' influence once it was decided to conduct the research. The study looked into the details of homework involvement to find out which areas can cause positive and/or negative outcomes on children. Then, all the findings were discussed to explore the balance between positive and negative outcomes of parental involvement in homework of secondary school children in Australia. The following conceptual framework guided the study.

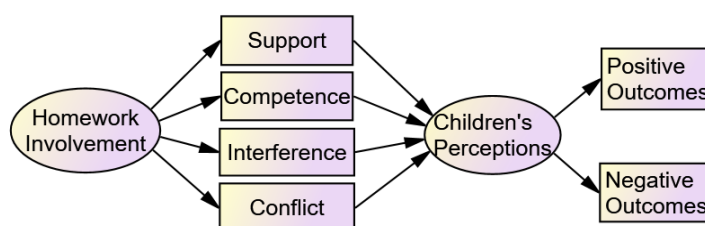


Figure 1. Conceptual framework adapted from Dumont et al. (2012).

With the permission of education authorities and principals, the consent forms and invitation letters were sent to schools and hard copies of the student questionnaire were distributed to secondary students in three different schools without being selective regarding their ethnic background, gender, or secondary year level. Students were asked to take a copy of the parental questionnaire home and hand it back to their teacher with at least one of the parents' responses. Then the researcher collected responses to the questionnaires filled out by both parents and children. In addition, it was possible to get permission from school principals to upload the questionnaires and make them available on school websites. This was convenient and enabled students and parents to respond to the questionnaires whenever it suited them.

There were different groups or clusters of participants in the probability sample surveyed in this study. They were both male or female secondary students from Year 7 to Year 12 and their male or female parents from different cultural backgrounds who live in Australia. Responses from parents and children were gathered using two questionnaires which were similar to each other. From the participants who completed the survey ($n_{parents}=85$ and $n_{students}=124$) the researcher interviewed a purposefully selected sample of eight families (parent and child separately). They were senior secondary students from Years 10, 11, or 12 and their parents. These parent-child dyads included equal amounts of male and female participants. There were 16 interviews in total. Interviews were the main means of collecting qualitative data though it was of interest to use responses to the descriptive questions in the questionnaires too.

Two sets of similar open-ended questions were compiled for families (parents and children) for which it was planned to collect answers during the structured interview process in which the content and procedures were organised in advance. Responses from both parents and children for similar questions were gathered to compare and contrast the responses. All the interviews were recorded using two digital audio recorders (one as a backup) and the audio files were transcribed, then checked for accuracy before being analysed. Then, data were synthesised and described using thematic analysis.

Results

Findings of the survey showed that both parents and children seemed to have similar perceptions about homework involvement. The parental perceptions variable has a large positive correlation ($r = .64$) with children's perceptions, which indicates an increase in parental perceptions is related to an increase in children's perceptions about mathematics homework. There is a medium positive correlation ($r = .43$) between parental perceptions and homework involvement. The correlation between homework involvement and children's perceptions is also medium and positive ($r = .33$). In addition to these relations, interviews provided more details about parental roles in children's homework.

As described by both parents and children homework involvement can be divided into parental activities such as support and interference. While parental support requires competence, interference may cause conflict between parents and children. Hence, these findings were in agreement with Dumont et al. (2012). Although some parents saw the importance of homework, others thought homework was work to be done by the child. Because of such attitudes they monitored their children's engagement from a distance. Frequency of involvement and the time taken by parents in any particular act of help seem to be a concern for children. The following are views of parents and children who participated in this study.

Support

A child participant said that parental involvement in homework was important to parents because they could find out what their children were learning at school and whether they were up-to-date with the assigned tasks. Even though this child received a lot of support from her father while she was in lower secondary levels, she did not require his support in her upper secondary levels. At the time of the interview she was able to do mathematics faster than her father. Even though this particular parent found it difficult to help his daughter with senior mathematics, he described parental assistance as a great resource. Even then, occasionally they worked in collaboration to solve worded questions which was an example of a parent's willingness to help and the child's willingness to be helped. Similarly, another child preferred working independently without support from her parents though all the children in this study sought help with homework when they were in primary school. However, this child commented that she occasionally needed assistance with her homework. Her mother believed that her husband was good at mathematics and said "If a parent in the family is capable and able to help, then that's probably the first place to go, if you think that they [children] respond well when listening to a parent". Expressing her ideas about homework, another student said, "If parents help all the time then you're not really being independent, you're not trying to solve problem by yourself". She added that she would first try the question a few ways herself, and if she was not sure at all how to continue she would ask her father who was willing to help. One father mentioned that he kept trying to teach but the child refused to have support. The reason was the time taken by this parent to explain mathematical concepts.

Competence

A parent said, "I know a lot of parents say they can't help their children with mathematics because they don't remember those particular concepts from their own schooling". She thought it was normal for parents not to get involved in the mathematics education of their children due to lack of capabilities. Even though her son did not get help with homework from his parents he was able to see the positive side of having such an opportunity. In contrast, another child had faith in his father's competence in mathematics and said he could ask his father for help when required. Conversely, his father had a different thought about his knowledge of mathematics. He said that he would not be capable of helping his son with his senior secondary mathematics. The child was just starting Year 11 at school and it seemed that he had not realised his father's concerns about helping with senior mathematics.

Conflict

Interestingly, a parent pointed out a problem that might arise when trying to help their children with homework. If the method the child learnt at school and the method the parent tried to teach were different, there could be arguments between parent and child and this could cause problems. Hence, the child might refuse help from the parent and both of them could be disappointed. A parent's response to the survey implied the same idea:

Some mathematical teaching methods are different from the days we learnt mathematics. So the child gets mixed up and they do not want us to help. (a survey participant - parent)

A child in the survey mentioned, "Parents become annoying when trying to explain maths problems that I don't understand". Three out of eight children claimed their parents were not helpful with their homework. They believed that they would not get much help from parents even if they asked. About the time when they started senior secondary

education they stopped seeking parents' support. One of the survey responses from a parent claimed that their child did not want or seek help because the child felt that it was enough to learn from school only. Similarly, in his interview a child showed self-confidence in his performance in mathematics and said that he did not require help from parents. When parents helped children, either parents or children could be annoyed and disrupt the partnership. Children find it easier to do homework by themselves or to get help from a friend, sibling, tutor, or their teacher than to work with parents.

Interference

While three out of eight parents were interested in checking their children's homework, others said that they would not check homework because they were not able to help with secondary school mathematics. Regardless, they would remind their children about homework or they would ask whether the children were up-to-date. Even though it was usually not an issue, one parent said that he would not be happy if his daughter did not finish her work. In that situation the parent said he would ask the daughter to catch up, and if she did not do that there might be a penalty such as not allowing her to watch television until she finished her homework. Another parent believed mathematics was an important subject and he wanted to ensure that his son was doing his work. Thus, he would find time to sit with the child and check his homework once or twice a week and would help him if necessary but he would not allow the child to ignore homework. Though another child was not happy to show his homework to parents, his mother wanted to check her son's work. When she demanded the son to show his homework he said "Mum, if there's no complaint from the teacher, then trust me". A child commented that her parents would not check her homework but they would expect her to get her work done. However, if they came to know that she was behind, her parents would encourage her to catch up as they knew the importance of mathematics for her future career plans. Her father said that this child was so self-motivated and diligent that he did not want to check her work in her senior secondary levels. A couple of parents did not check but they asked about their son's homework every once in a while. There was a similar response from a parent about checking her daughter's homework. She said "I don't check my daughter's homework at all anymore, because she's at a stage where she probably remembers maths better than what I do [laughs]". Likewise, a parent who responded to the questionnaire noted:

As for checking homework, I make sure it is done but I do not check the content. Maths not being a forte of mine I would not know if it was correct or not. (a survey participant - parent)

One of the child participants of the survey mentioned that parental aspirations had put pressure on him because his parents would not be able to understand his thoughts. Describing the checking of homework the participant added:

My parents do not check my homework because I always do it to the best of my ability. So there is no need. I sometimes feel pressure from my parents to do well, especially from my dad, but they don't realise that they are. (a survey participant - child)

While two parents were keen to check their children's homework, other six had given up on checking with the growth of children. As has been noted, most of the parents checked their children's homework and helped them when the children were at primary school. Eventually, some parents found it unnecessary to check their children's homework as they grew up. Checking or interfering with the mathematics homework of children showed a decreasing trend with the increase of age of children. Many parents could not remember high

school mathematics and thought the curriculum and teaching methods were different from what they had experienced.

Monitor

Although some parents did not involve themselves in checking senior secondary students' school work it seemed that they were monitoring what their children were doing, from a distance. Despite the children being engaging in their homework independently, parents did have concerns about their children. Two children said that their parents would not be happy if they were staying up late at night doing homework or they were behind and they had been going out with friends or wasting time on the computer. Therefore, these children always tried to finish their homework before everything else. Another child agreed that parents should know what was happening with children's education and their homework and should keep up to date to a certain extent. Describing frequency of interfering, she said if the parents wanted to "look over your shoulder" and monitor everything you do every five minutes, it would be annoying. One of the other children said, "Whenever my parents see me sitting around and doing nothing they would remind me to do homework". Although her parents wanted her to finish homework, they would never come to her room and sit with her to ensure she did it. After coming to know that her son did not like to talk about his homework, one parent decided to check her son's records online from the school website. Then she was able to find out whether her son had submitted all his work in time or not. She found it easier than asking him. Only when she found something unusual did she inquire about it from the son. A father urged parents to keep their eyes on what children might be doing, otherwise, parents would not be aware whether they were engaged with schoolwork or not. These scenarios suggest that children sometimes may not like it when their parents monitor or check them all the time. Nevertheless, some parents do monitor their children at least from a distance.

Attitudes

Parents' opinions about mathematics homework seems different. As explained by a parent, homework could be an important way of building on skills and engaging with the content learned during the day. He also said that he would not be able to imagine doing well in maths without actually doing homework. Conversely, a mother commented "I've always had the attitude that it's not my homework, and I have never helped my son with his homework". If the child was not able to do his homework on his own, the mother would write a note to the teacher saying that he had attempted to do the work but was unable to do it. Likewise, another mother did not intervene with her daughter's homework as she believed that homework should be a child's responsibility and the child should be accountable for it. Interestingly, both those mothers had provided tutors for their children and those children had the opportunity to get help from the tutor. Having different attitudes, another parent considered homework as an extension to school work which could help children reflect on what they learned in class. If the child did not attempt his homework this father believed that the child would be missing out on the opportunity to enhance his skills. Hence, parents have different attitudes about homework and they act differently with children.

The results indicate that parental support, interference, and monitoring can result in positive or negative outcomes depending on how frequently and how long these parents involve with their children's homework.

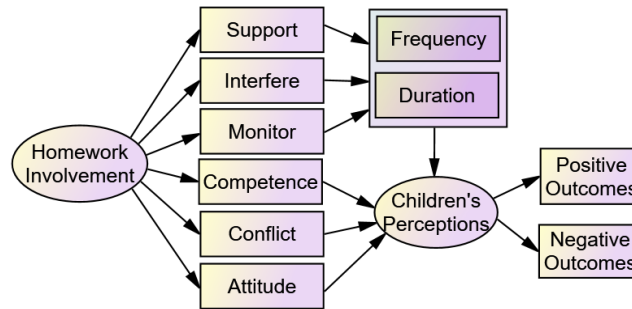


Figure 2. New model with summary of findings.

Discussion and Conclusion

This study was consistent with the findings of Dumont et al. (2012) and extended by adding parents' attitudes and the ways they monitor homework. In particular, the study showed that when parents want to be involved in homework they seemed to support to get the work done. Some parents checked to see if the homework was completed and submitted before the deadlines. Another group of parents did not directly help with homework but monitored their children from a distance. Sometimes these parents asked about the homework and kept an eye on their children to check if they were engaging in those activities. While some parents believed that homework can be important to understand the learning at school, some other parents did not see homework as important. Some of them thought it was the responsibility of the child to do the homework. It also seemed that there were parents who could not help their children with homework because they had forgotten what they had learnt in high school or due to lack of knowledge in mathematics.

Some children wanted to be helped while others did not. Hence, it was found that there were four different groups of parents and children linked to help with homework. They were: parents who could help and children who wanted to be helped, parents who could help and children who did not want to be helped, parents who could not help and children who wanted to be helped, and parents who could not help and children who did not want to be helped. It is recommended that parents, policymakers, school administrators, and teachers should continue to investigate ways to increase parental involvement in mathematics education of their children to improve the children's academic performance as well as their cognitive competence. Of course teachers and parents are the most influential in children's education, but their responsibilities are different. Parents who valued homework were more involved in their children's education than other parents. It is important to note that greater amounts of parental help may be perceived as more controlling and intrusive by children. The current study was in line with the self-determination theory (Deci & Ryan, 1987), which stated that children's innate needs for competence, autonomy, and relatedness are undermined when parents are intrusive and controlling. Parental involvement in homework can result in positive outcomes if children are happy to have such support. Parental involvement seemed to reduce across secondary year levels due to autonomy grant and inability to provide support with higher level mathematics. However, it was an onerous task to attempt to categorise parental involvement as positive or negative outcomes because even homework help can be inverted to a negative pressure if there are no limitations to the activity. Hence, parents need to be mindful of becoming involved with their children's education to an appropriate level only.

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