Teaching Mathematics as French Teacher Candidates

Les Barrières Langagières dans les Problèmes de Mathématiques

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ABSTRACT

In the French education program at Glendon College, several teacher candidates (TCs) have expressed doubts about teaching mathematics in French. Given that most TCs are not native French speakers, it is possible that their own abilities in mathematics are weaker in French. This study aims to examine the differences that could exist between their problem solving abilities in English and in French, as well as their attitudes towards teaching mathematics in a French immersion program. The participants, TCs at Glendon, completed a questionnaire outlining their individual perspectives about teaching mathematics and were asked to solve two word problems in either English or French. The attitudes questionnaire indicated that TCs do not generally believe that language barriers in French immersion education can influence solving word problems in mathematics. On average, the participants who received the word problems in English did better than those who received the same problems in French, and completed them in a shorter amount of time. In addition, the participants in the English condition rated their comprehension as higher, although they did not rate the problem difficulty differently. These discoveries can influence the training that educators in the French education program receive in mathematics.

METHODS

Our 29 participants were teacher candidates in the concurrent education program for French teaching at Glendon College. They were asked to complete a bilingual online survey:

1) A basic demographic questionnaire (ex: age, sex, etc.)
2) Two word problems at the grade 8 mathematics level. Participants were randomly assigned to receive the problems in English or in French.
3) An attitudes questionnaire regarding participants' opinions about word problems in the French Immersion context, and the language barriers that may arise.

The data collected from these surveys was statistically analyzed using SPSS.

RESULTS

- Participants in the French condition performed significantly worse than their peers in the English condition: they answered 1.1 out of 2 questions correctly in comparison to 1.8889 out of 2 questions correctly.
- Participants in the French condition performed significantly slower than their peers in the English condition: they solved these problems in 300.55 seconds in comparison to 245.33 seconds.
- Although there was no difference between participants in regards to their perception of difficulty of the problems, the participants in the French condition reported greater difficulty in the comprehension of these problems.
- Self-evaluation of abilities in math (3.15 out of 5) and of total abilities in French (3.43 out of 5) have no significant effect on performance in word problems.
- 66% believed word problems stimulate critical thinking
- 52% believed that word problems present a bias for children with difficulties in reading or writing.
- 45% believed that word problems present a bias for children enrolled in the French Immersion program.

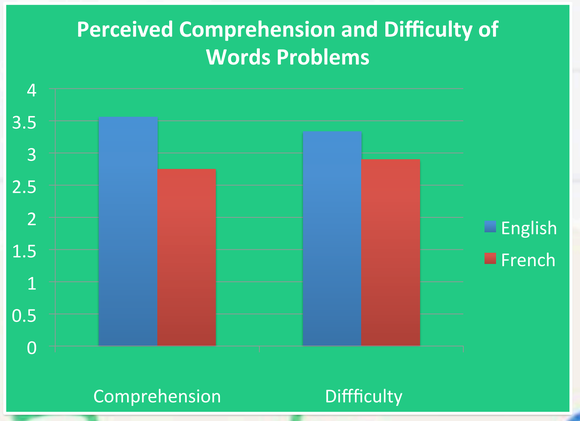
RESEARCH QUESTIONS AND HYPOTHESES

Do French teacher candidates' mathematic problem solving abilities in French suffer in comparison to their English skills?

- Since most teacher candidates at Glendon are not native French speakers, they will find it easier to solve the problems in English, even without noticing.

Do they believe that their students are affected by this phenomenon?

- Overall, the teacher candidates at Glendon will appear aware of the potential language barriers that may exist in teaching mathematics in a French Immersion setting.



CONCLUSIONS

As predicted, participants who completed the word problems in French were less successful and had more trouble comprehending these problems in comparison to their peers in the English condition. It can be hypothesized that this may be due to the fact that non-native French speakers need to first translate the mathematical information before solving the problem. Causal research is needed to confirm this possible explanation. The majority of TCs did not believe that a language barrier exists in the mathematical education of French Immersion students. This may be caused by the lack of conversation about this topic. In future studies, it would be important to repeat this process with a greater quantity of word problems to increase the validity of the results. It would be equally interesting to repeat a similar experiment with current students in the program to examine whether they are experiencing the same challenges.