Title Title I Don't Know

Rom Ogen, Avishay Kitron, Omer Harel, Sagi Nakash

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1 Abstract

From elementary and high schools until college, students all over the world are mainly evaluated by exam grades. Thus, for them, studying well before exams is definitely a key to success. Our research focuses on the question whether, and more important - when and how, to study alone or as part of study group. Previous research has mainly focused on objective grades-driven estimations. Thus, not addressing the full, complex picture - excluding subjective aspects such as personal satisfaction and social ones as well. Today, as the expectation for personal customization is taken for granted, those kinds of research appears to be very limited in their ability to reach significant, practical outcomes and recommendations for students. In our study, we tried to overcome just that, examining students' grades as well as parameters like self-improvement, study time and satisfaction.

We spread a questionnaire between university students gathering information on study ways (alone vs groups), group sizes, exam types, group dynamics and knowledge gaps; and their effect on study effectiveness and exam results. It has been concluded that large groups and close relationships produced better effectiveness but worse results, as smaller knowledge gaps and theoretical exams had a positive influence on both aspects.

2 Introduction

3 Related Work

[1]

4 Research Method

5 Results

6 Discussion

6.1 Base Assumptions

In this study, as we assumed, there was no significant correlation found between exams results (Definition 1) and studying effectiveness (Definition 2). Thus, our model's base assumption seems to be correct, and in order to examine the topic of study groups and address its complexity correctly and effectively - there is a need to examine those two parameters separately.

Looking closely at the questionnaire results we can note several interesting points: 1. No groups recorded with more than 5 members. 2. No groups recorded with indication of very large initial knowledge gaps between its members. 3. No groups recorded with no relationships between group members.

Those may indicate that even with no guidance, professional knowledge or some research outcomes usage; students tend to avoid studying in groups with such characteristics. It might sometimes be a result of previous experience with such groups that ended up with negative results or even a result of an intuition, as they 'feel' or believe it is not effective. Either way, it strengthens our model's hypotheses as to the preference to avoid attending such groups looking for better grades, satisfaction and study effectiveness.

6.2 Regrets and Social Effects

As to the percentage of students taking the questionnaire regretting the way they have chosen to study, no significant difference was found between students who studying by themselves and students who took part in a study group. A pretty low percentage was indicated for both in that aspect.

Examining social effects among students who have attended a study group, it was found that almost half of them indicated a positive effect on the relationships between group members as a result of studying together.

However, they were also some students (almost 6%) stating the opposite, concluding that the study period ended up with a negative social effect.

6.3 Studying Alone vs In Group

In this section we'll address the question whether to study alone or as part of a group. In the next section, we'll address the different characteristics of study groups. In this study, we found a significant connection between students' exam performance and satisfaction, and study groups usage. Rybczynski et al. (2010) hasn't got to similar results in a study of undergraduate biology students at Miami University, where no differences found between exam scores of those who used study groups and those who did not. However, others (Sokolove and

Marbach-Ad, 1999; Burrowes, 2003; Maloof and White, 2005; Tessier, 2007) has indeed indicated such difference. But, in all of the above studies, the subjective factor of students' satisfaction level hasn't been taken into account. In our investigation, participation in study groups have helped to achieve better exam results. In exams categorized as theoretical, this connection was even more significant (comparing to practical exams). It strengthens our model, which stated a hypothetical positive connection between exams considered theoretical and exam results.

As to the study effectiveness, a significant interaction was found between the exam type (theoretical or practical) and study groups usage. For theoretical exams, attending a study group has resulted in higher effectiveness. However, for more practical ones, higher effectiveness was reached studying alone. Such interaction is illustrated in Figure 1. It also connects to Rybczynski et al. that suggested that the benefits of study groups may extend beyond content gains as measured by test scores.

6.4 Study Groups Characteristics

In this study, we examined the exam type as well as the following study groups' characteristics: 1. Group size. 2. Relationships between group members. 3. Knowledge gaps. 4. Initial relative knowledge level.

To reflect the data from this part of the study, two models were created. Those models reflect the linear regression equations produced for both exam results and study effectiveness. The first (Figure 2), represents the positive and negative factors for producing better exam results. The second (Figure 3), stands for producing better effectiveness. As to the exam results, a significant linear regression equation was found, showing that theoretical exams, smaller group sizes (2-3 members), higher level of initial relative knowledge and smaller knowledge gaps all result in better exam results, as our initial model states. However, too close relationships between group members might result in worse exam results.

Theoretical exams, initial relative knowledge of a higher level and smaller knowledge gaps appears to positively affect the study effectiveness also. But in contrast to exam results, better effectiveness is shown for groups with more members and also with closer relationships among them.

That expresses a part of the difference between effectiveness and exam results, as students might feel that their studying group was very effective but end up not satisfied with their grade. Studying with more friends might make the process more fun and feel better, but lower the results from the same reasons.

6.5 Implications for Practice

One of our goals in this study is to be able to give some useful guidelines for students or even for students to be. By evaluating both the results and the study effectiveness separately, we aimed at addressing the study groups issue, its advantages and disadvantages in a more precise way.

Significantly better exam results and study effectiveness were found for groups with no more than 3 members, with small knowledge gaps among them. Being able to attend such a group, when your initial knowledge level comparing to the other group members is pretty high, is very advisable according to our results. Looking at the numbers, such combination appears to increase the general exam results average (which is a number between 0 and 50) by 12 points, and the general effectiveness average rate (which is between 0 and 5 points) by 0.7 points. By concluding both the grade and the satisfaction level from it as the exam results, we believe that our results can be stronger and better adjusted to students, and thus more practical.

Rybczynski et al. concluded that instructors giving some guidance to students can be very helpful working as a group. A possibility of combining that kind of guidance with our findings and implications may be even better in leading students to both arrange and study in groups more effectively.

6.6 Threats to Validity and Limitations

The limitations and threats to our results validity, which can be both internal and external, include: 1. Limited sample size, of 129 participants. 2. The questionnaire was spread to university students only. 3. Inaccurate questionnaire answers (both intentionally and unintentionally). 4. Parameters such as study environment and more aspects of group dynamics were not taken into account.

7 Summary

References

[1] Eilisha Joy Bryson. *Effectiveness of Working Individually Versus Cooperative Groups: A Classroom-Based Research Project.* PhD thesis, Master Thesis. EDUC 545-631˜ Leadership for Middle School Science. University of Pennsylvania, 2007.

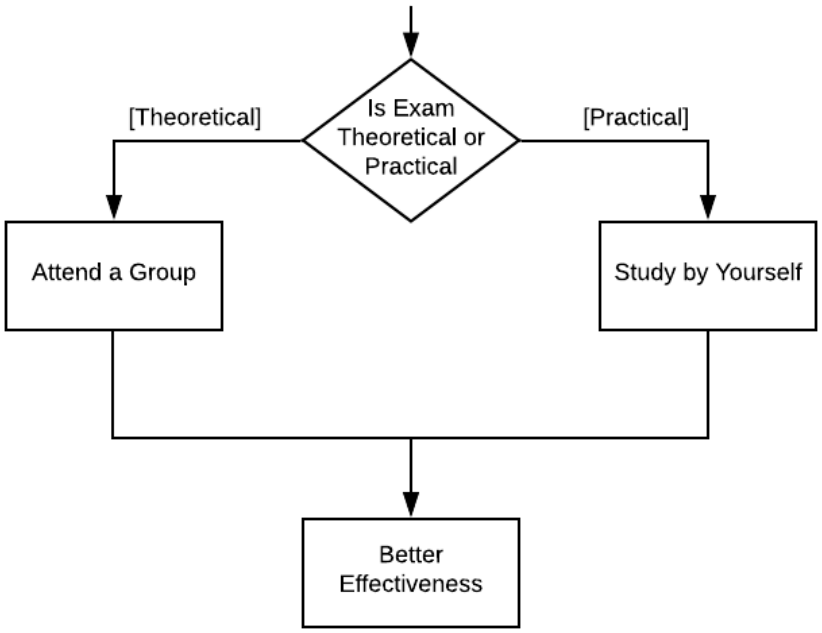

Figure 1: Name It

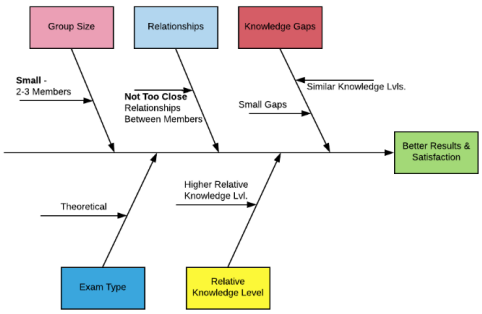

Figure 2: Name It

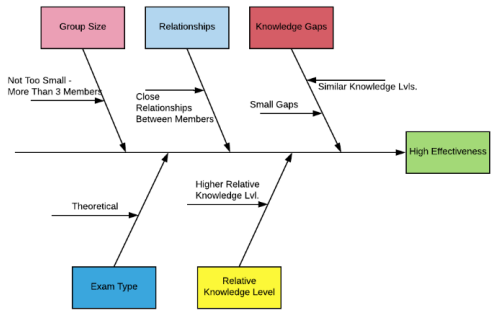

Figure 3: Name It