

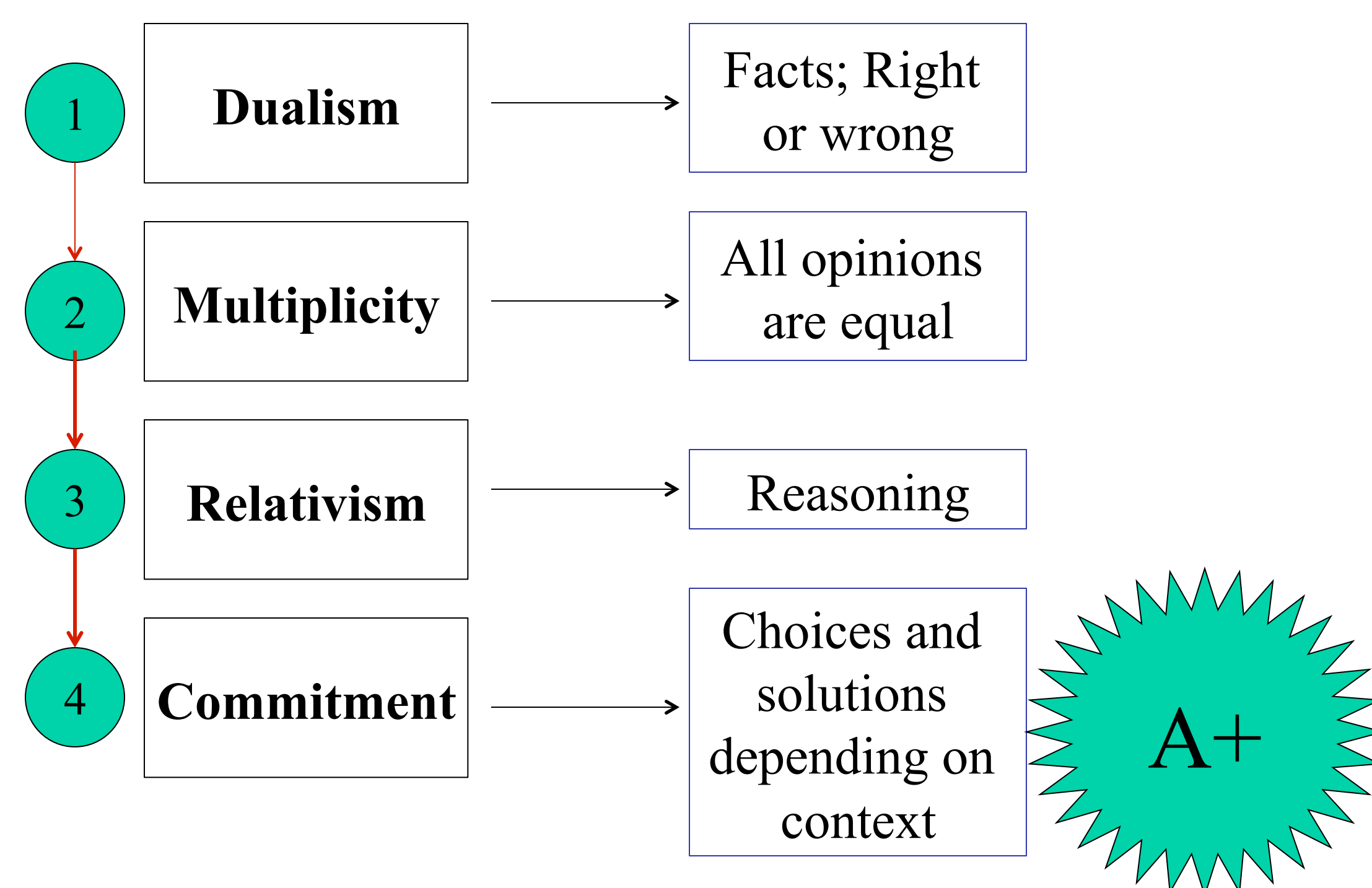
# Assessment of the Relationship Between Learning Preferences, Innovative Teaching Tools, and Academic Performance in a Medical Pharmacology Course in Colombia

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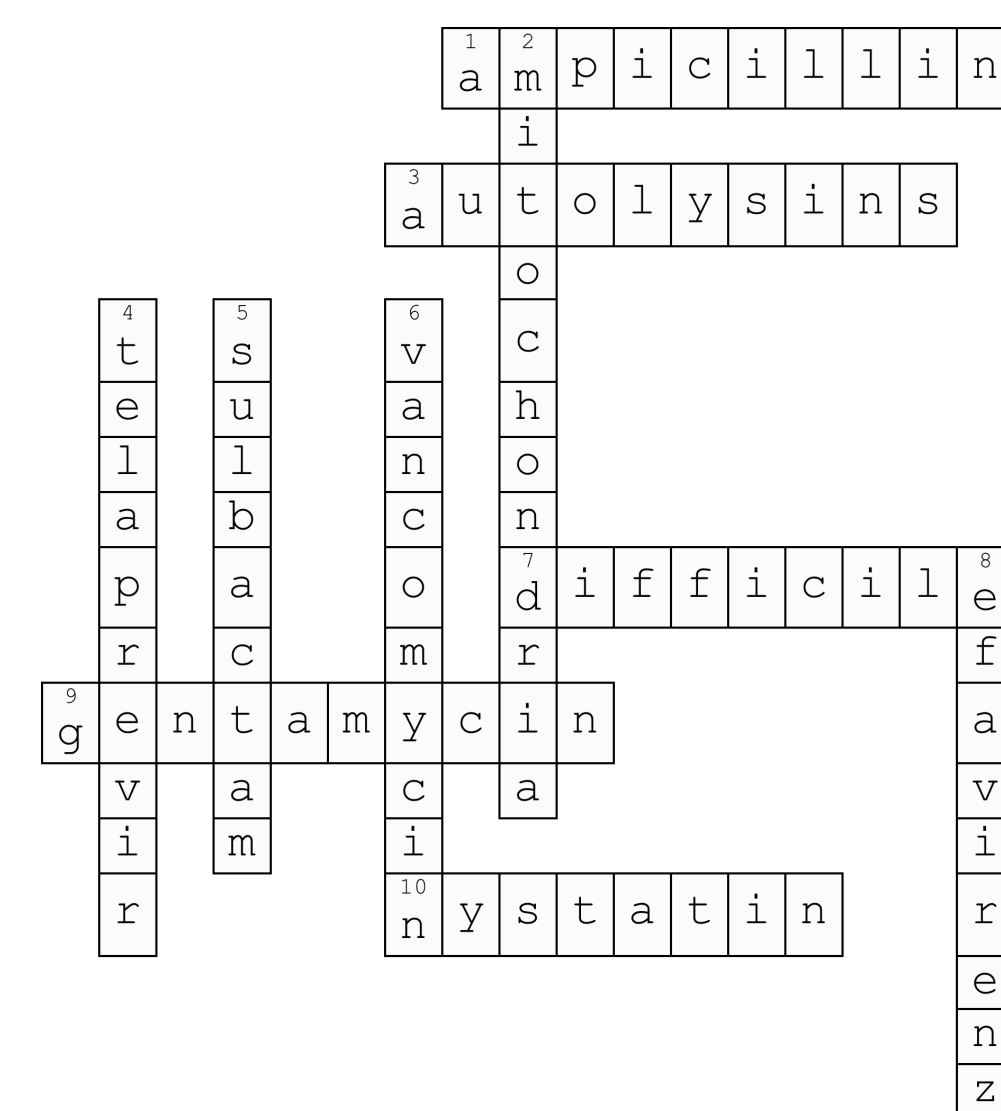


## Introduction

There is paucity of information regarding the relationship between grades in Pharmacology and learning preferences. We hypothesized we could find a relationship between their self reported preferences in learning according to the Gainen questionnaire, the Level of learning according to Perry, and their final grade in the Pharmacology course



## Learning Tools



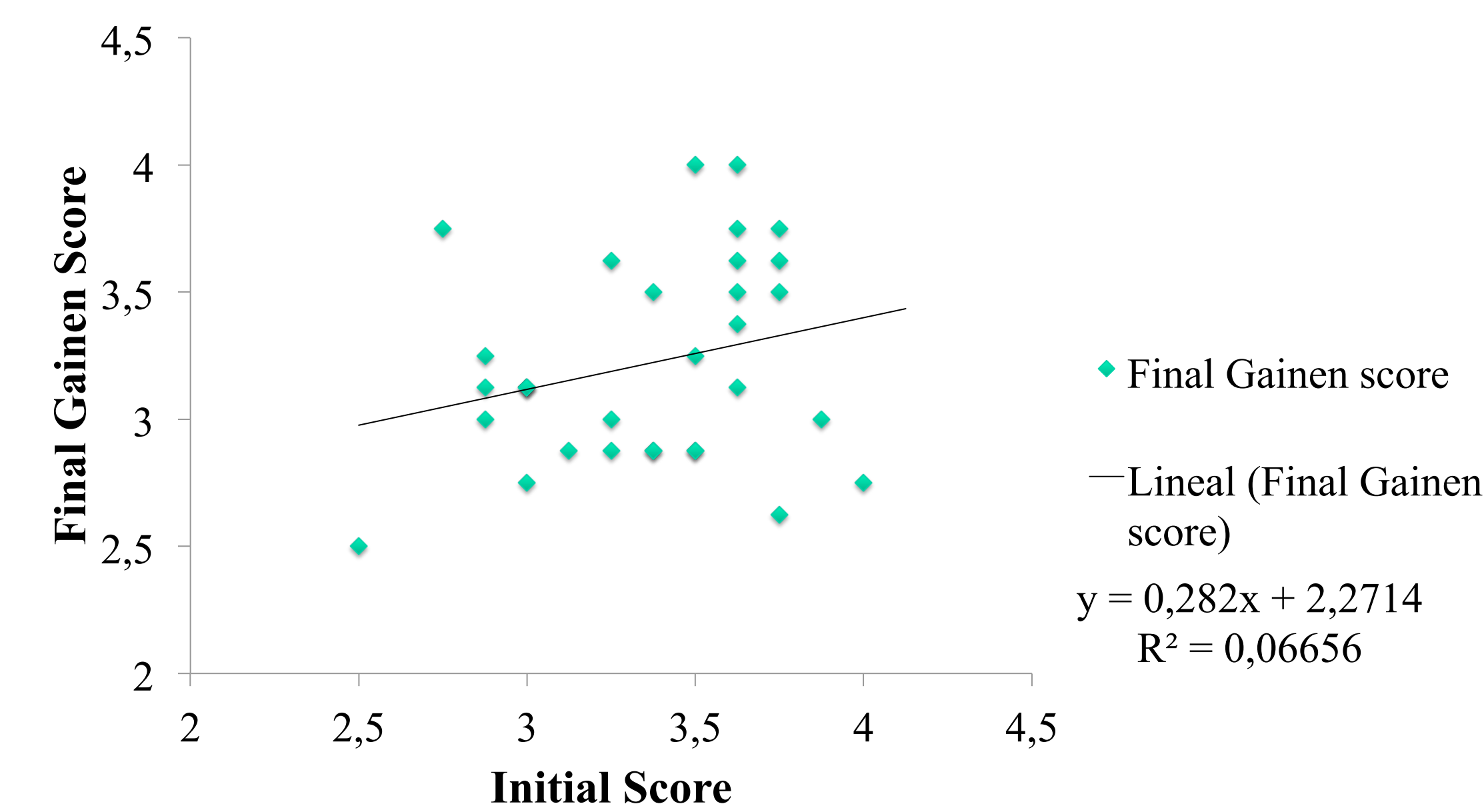
Picture 1. Sample Question of one CrossWord Puzzle used by the Students. (created on TheTeachersCorner.com crossword maker)



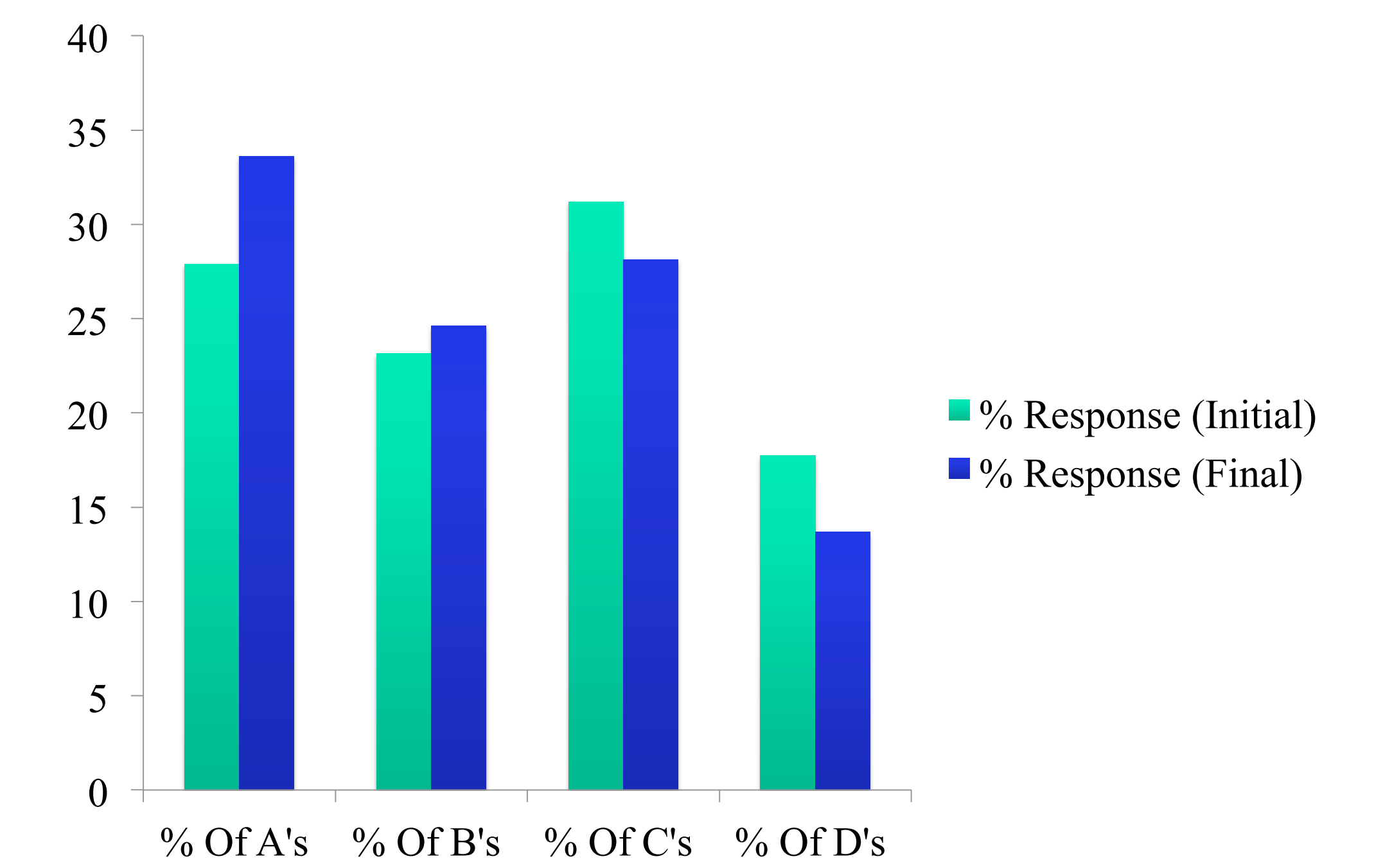
Picture 2. Students and Learning Catalytics

## Results

**Relationship between Initial and final Gainen scores**



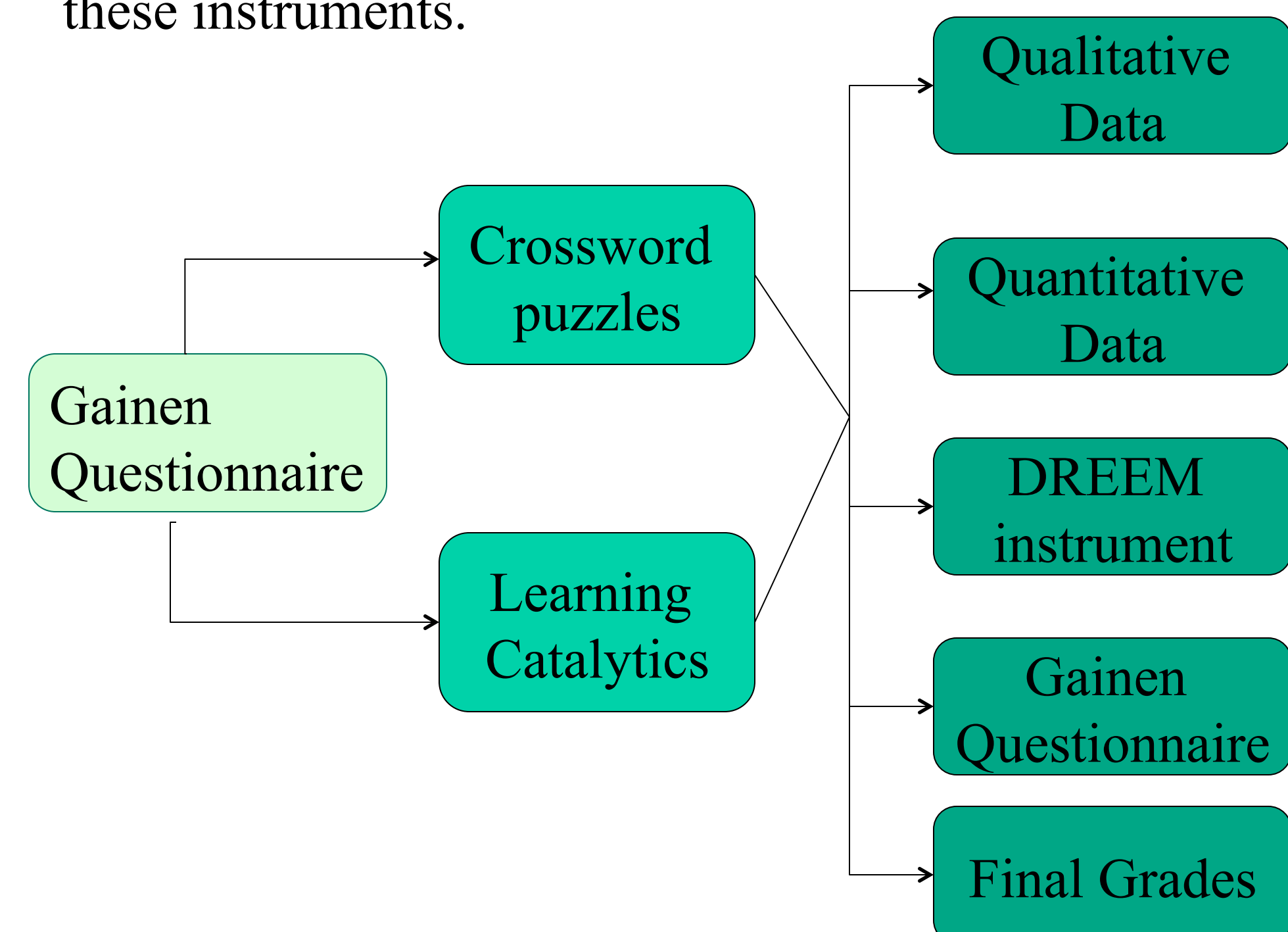
**Figure 1. Relationship between initial and final Gainen scores .**The final score was plotted against the initial Gainen score. A non-statistically significant positive correlation was found between scores .  $R^2=0.6656$



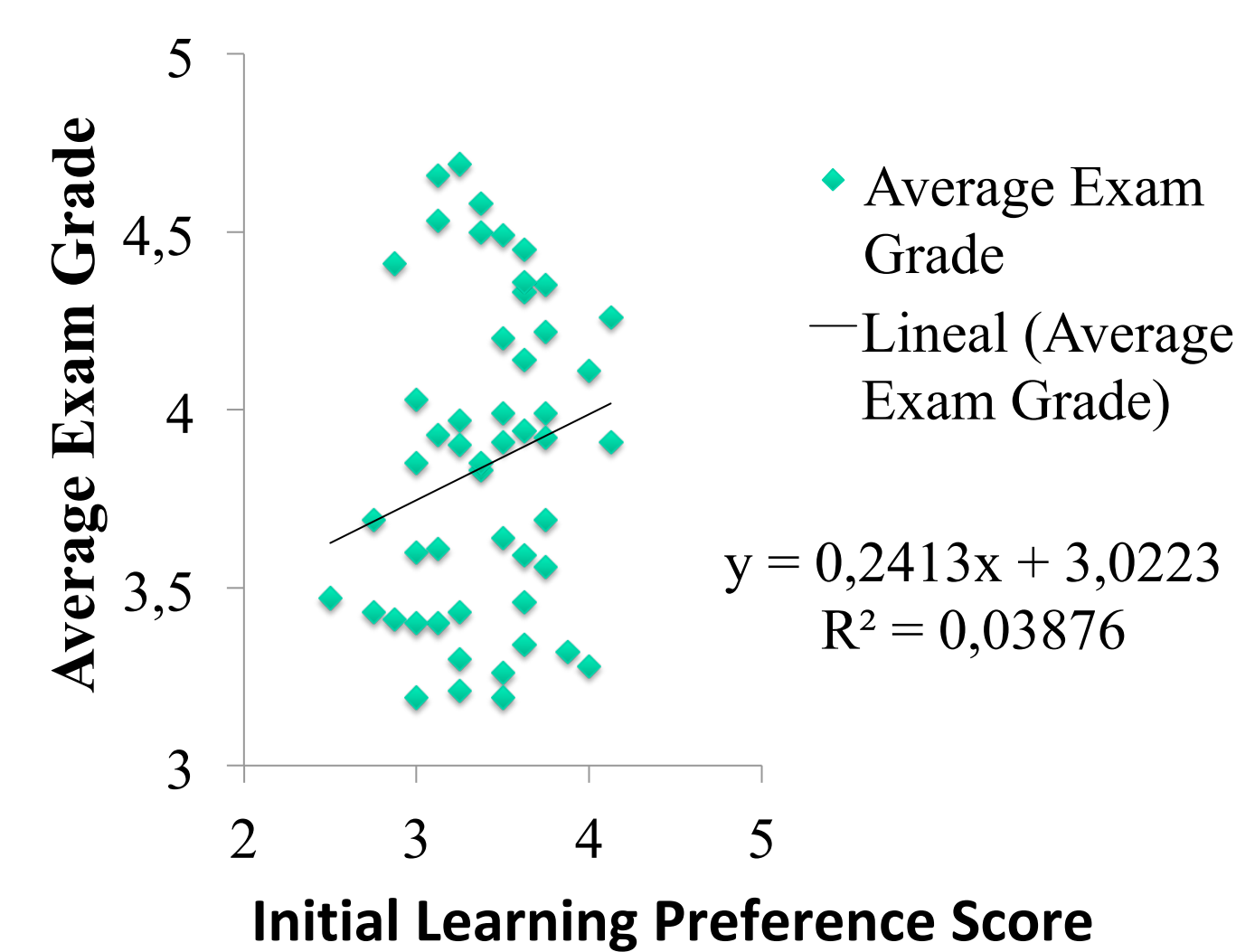
**Figure 2. Effect of the Learning Tools in the Percentage of Students Choosing each option in the Gainen Questionnaire.** No statistically significant correlation was found.  $P$ -value of the difference between averages=0.10

## Methods

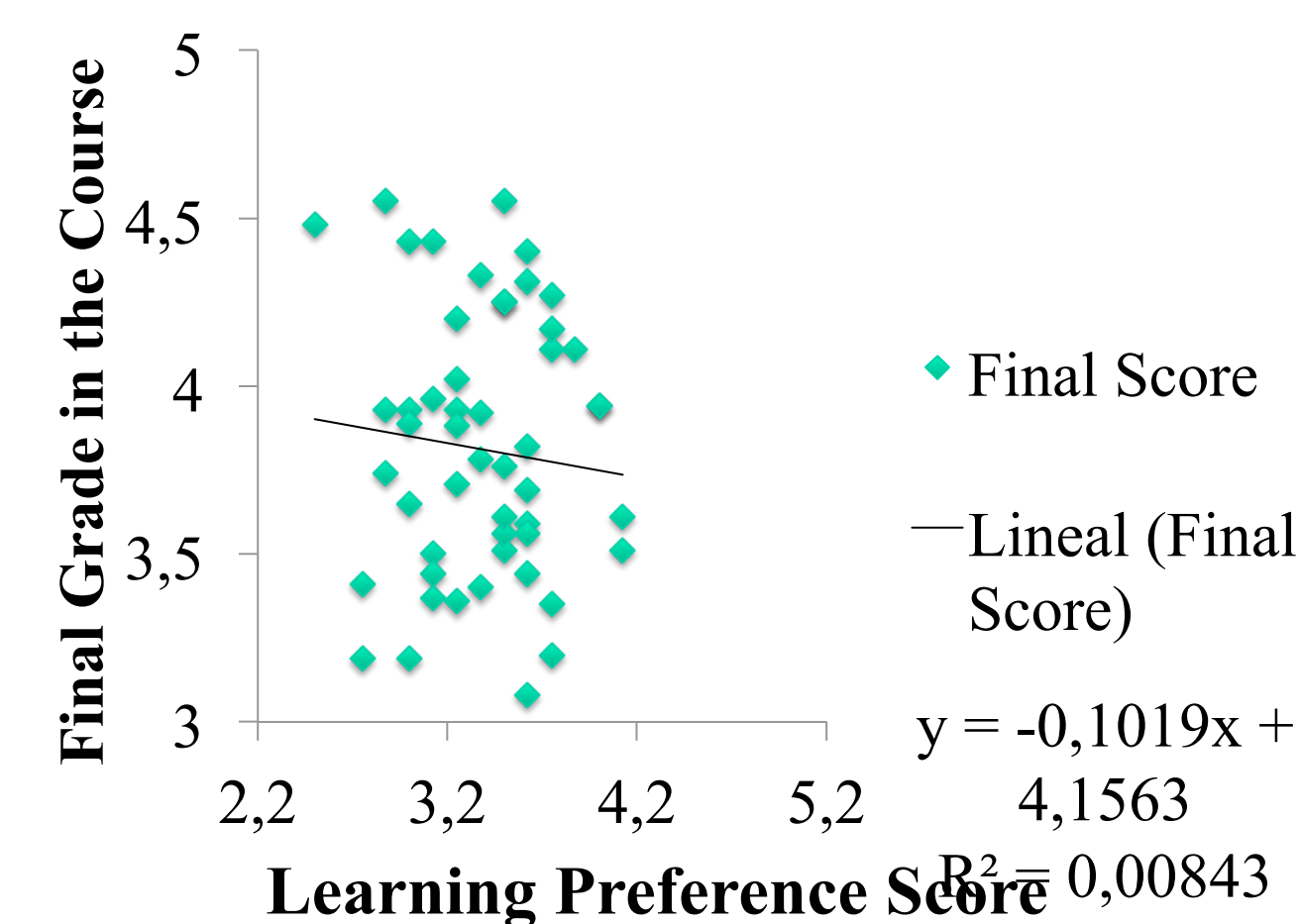
Gainen Questionnaire was administered at the beginning and at the end of the Pharmacology course. Crossword puzzles were used to reinforce knowledge before exams. We used Learning Catalytics® in some (but not all) sessions. The DREEM instrument was used at the end to assess Student's perception of the learning environment. We also included qualitative and quantitative questions in the exams regarding their perception of the effectiveness of these instruments.



## Grades and Learning Preferences

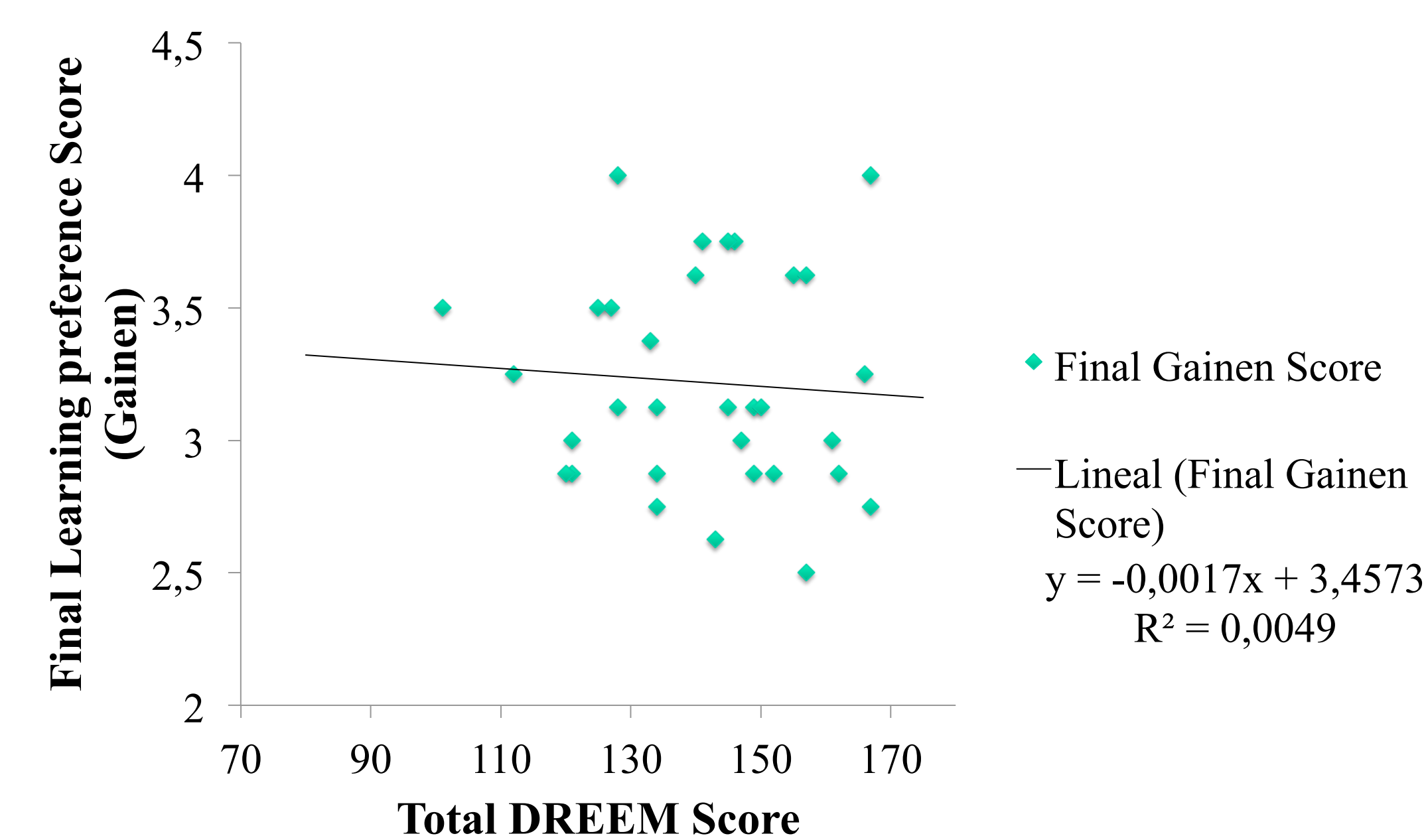


**Figure 4. Average Exam Grade and Learning Preference** We found a weak positive correlation between the Initial Learning Preference Score and the Average in Student's Exam Scores.  $R^2=0,03876$



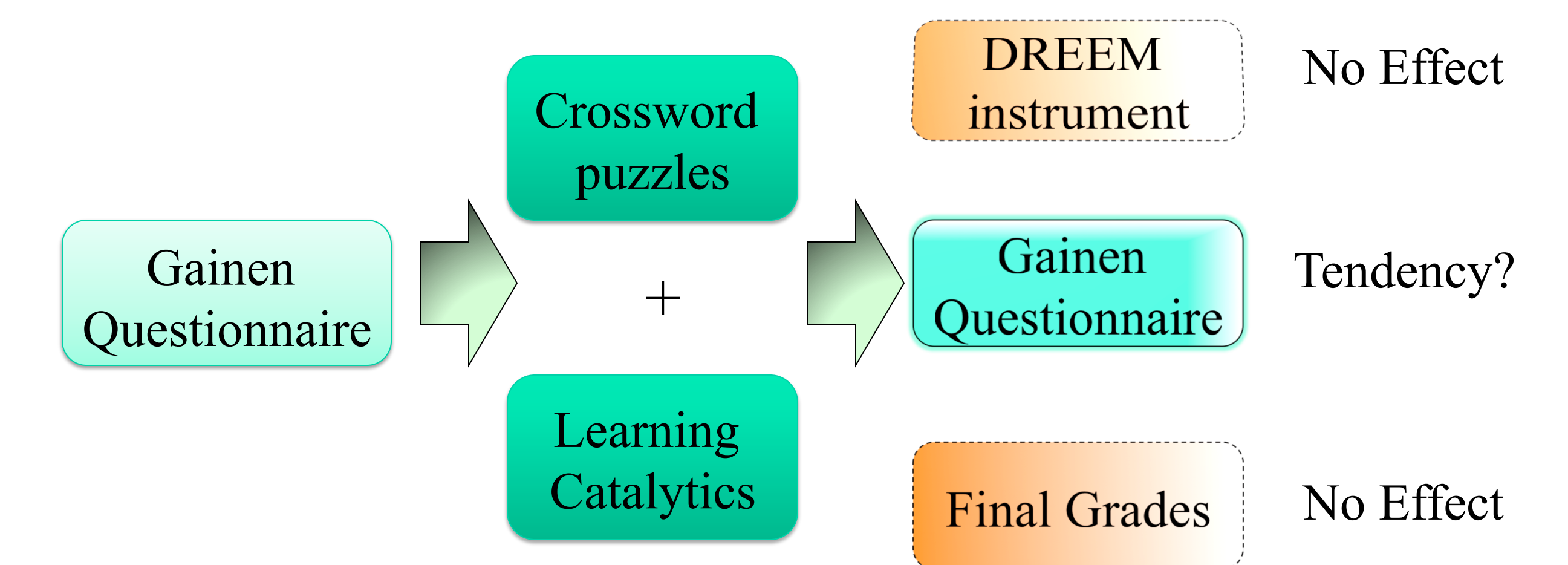
**Figure 5. Final Grade in the Course and Learning Preference** We found a weak negative correlation between the Initial Learning Preference Score and the Final Grade the Students Had in the course.  $R^2=0,00843$

**Relationship Between Learning Preference and Environment Perception**



**Figure 6. Final Gainen Score Plotted against DREEM score.** A weak inverse correlation was found between Learning Preference and Perception of the Learning Environment.  $R=0.0049$

## Conclusions



- There appears to be a difference in the Learning Preference Score between the beginning and the end of the course
- We found only weak interaction between grades in the course and learning preferences. There was a difference when homework was included in the analysis.
- We found little, if any, correlation between Satisfaction with the Learning Environment and their Learning Preference
- There is still doubt about the effect of these novel teaching methods.