

## GRAPHIC EXERCISE USED AS AN ACTIVE BREAK IN TIME MANAGEMENT (INTELLECTUAL TRAINING)

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**Abstract:** *Students' academic performance is, mainly, based on their attendance to classes and individual study. Lately, class attendance decreased and, therefore, individual study seems to gain more and more importance in obtaining academic success. The main problem associated with this is the reduced time that students allocate to study. Given these circumstances, we suggest that graphic exercise, used as an active break during individual study, improves the way students manage their time. Statistical analysis of data confirmed our hypothesis.*

**Keywords:** *graphic exercise, time management, active break, individual study*

### 1. INTRODUCTION

Nowadays, a widespread phenomenon that takes greater amplitude with each academic year is the last minute (or last hundred meters) phenomenon. This phenomenon is associated with reduced time allocated by students to individual study and class attendance, with superficial homework or exam preparation in only two or three days. Alongside socio-economic factors (the number of employed students is significantly high), there are other determinants of the phenomenon, mainly those regarding motivation and time management.

In a previous study (Indreica *et al.*, 2011: 1096-1102) we showed that time management is highly correlated with academic performance.

Also, when obtaining academic success students are highly motivated and they better organize their working time. In the mentioned study, we proposed a complex time management program requiring an educational counsellor as coordinator.

In the present study, we intend to offer an alternative (Dale, 1993) for optimizing time management in order to improve learning.

### 2. GRAPHIC EXERCISE AS AN ACTIVE BREAK

#### 2.1 The graphic exercise

The concept of graphic exercise is used in educational sciences with reference to learning writing skill (in preschool and primary education) or to hand-eye coordination development.

In visual arts this concept is much frequently use (Ailincăi, 2000), to describe the practice of repeating and setting a simple or complex hand-eye movement by drawing a spontaneous or elaborate representation. The line and the dot are the main elements of plastic language use in graphic exercises (2013:11.09). Through modulation and modelling, the line and the dot become bi- and tri-dimensional forms. The colour splash can be used only as support for line and dot.

#### 2.2 Types of graphic exercises

Taking the form into consideration (Ailincă, 2000), graphic exercises are elaborated or spontaneous. According to the elements of graphic language that are used, there are simple (based either on the line or the dot) or mixed graphic exercises (combining the line and the dot).

## Graphic exercise used as an active break in time management (intellectual training)

According to the degree of difficulty of the execution, there is an ample scale of graphic exercises from very easy to very difficult. In the study presented below we used only exercises with a low level of difficulty as none of the participants had drawing skills.

Elaborated, simple and low difficulty level graphic exercises can be drawn using a helping instrument, as the one presented in figure 1.



Fig. 1 *Serrated wheel with disk instrument*

When using this instrument, one holds the serrated wheel with the left hand fixated on the paper, inserts the pencil tip in one of the disk holes and moves the disk in clockwise direction. Graphic forms as those presented in figure 2 are obtained.

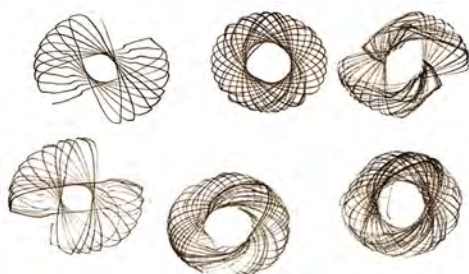


Fig. 2 *Models of graphic exercises made with serrated wheel with disk*

Spontaneous graphic exercises are much easier to execute and preferred by those with low drawing skills as they considered them a game. No searching and probing is necessary. Music is an effective method of eliminating blocks, by moving the pencil in the rhythm of the music. It is considered that the trace left by the pencil on the paper has a positive psychological effect on the person (Lauric, 2011: 102-107; Gauthier, 1990), preparing her or him for the upcoming effort. This is way graphic exercises are being recommended during habituation with the task, at the beginning of individual study.

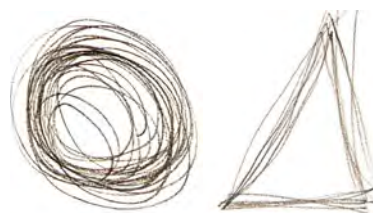


Fig. 3 *Spontaneous graphic exercises*

Elaborated forms can be made based on spontaneous graphic exercises, which activate expressive creativity, intrinsic motivation and imagination. This type of graphic exercises (Figure 2) is recommended during individual study, at an interval of 50 minute of continuous effort. Also, these exercises can be combined with elaborated ones made with the instrument presented in figure 1.



Fig. 4 *Graphic exercises elaborated on spontaneous forms*

Graphic exercises based on elaborated require more time and, therefore, are recommended at the end of the daily study period as a form of relaxation after sustained effort.

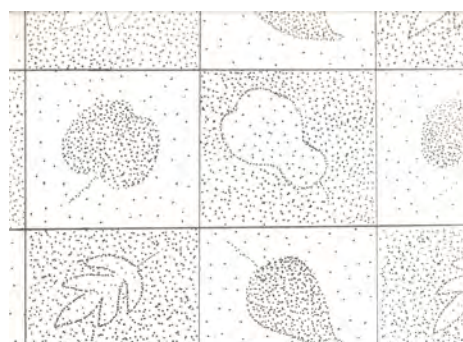


Fig. 5 *Graphic exercise on elaborated forms*

In elaborated graphic exercises, with chromatic support, the colour splash is not used for creating forms; usually, it is being used a coloured line on a coloured background.

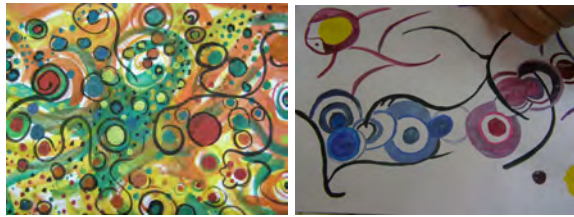


Fig. 6 Elaborated graphic exercises, with chromatic support

The exercises presented in figure 6 are recommended as an active break only when the person is involved in individual study an entire day. These exercises can be executed during two long periods of intellectual effort (for example in a daily schedule that starts with 4 or 5 hours of individual learning in the morning, continues with a lunch break, an active break – elaborated graphic exercise with chromatic support, and ends with 4-5 hours of study in the afternoon).

### 3. METHODOLOGY

#### 3.1 Research hypothesis

The main hypothesis of the study is that *graphic exercise, used as an active break during individual study, improves time management.*

We intend to determine the extent by which an intellectual training program improves management of time. After implementing the program, we expect to identify differences on the following aspects: students will better organize their time, will be stronger intrinsic motivated, will strongly engage in solving the tasks, will allocate more time for study, and will be much more satisfied by their learning activity.

#### 3.2 Research design

We test the hypothesis in an experimental design, with pre-test and post-test, with one experimental group and no control group. The pre-test took place in 16 – 20 July 2011, while the post-test took place in 20 - 23 September 2012. The experimental intervention consisted in implementation of active break by students during individual study (august 2011). All participants were instructed (in 22-28 July 2011) on how to use active breaks while learning.

#### 3.3. Methods

The following methods were used for collecting the data: 1) analysis of school documents – used for data on school performance (SP) which was quantified on a 5-step scale, with 1= very low level (VL), 2 = low level (L), 3 = medium level (M), 4 = high level (H), 5 = very high level (VH); questionnaire for assessment of motivation for learning (Magher, 2005: 174-176), comprising of 20 items on a 5-step scale ranging from 1 (VL) to 5 (VH) and measuring intrinsic motivation (IM), extrinsic motivation (EM) and satisfaction level (SL); self-observation for determine the time necessary for mobilizing for task solving (MTS); analysis of the inventory of activities that had to be done and the one that were done, with the time period allocated to each – for measuring the management of time (TM) and the duration of time allocated to individual study (TIS); the experiment – having an intellectual training based on active breaks during individual study; statistical methods.

#### 3.4 Sample

The participants to the study were 47 persons, 24 boys and 23 girls, attending psycho-pedagogical module. All participants were recorded with school failure after the summer period of exams at their main specialization (Economics, Design of products and environment, Materials science and engineering, Wood industry).

Participants have been assessed in two distinct moments, before and after experimental intervention on the following dimension: management of time (TM), intrinsic motivation (IM), extrinsic motivation (EM), school performance (SP), time allocated to individual study (TIS), time necessary for mobilizing for task solving (MTS), and satisfaction level (SL).

#### 3.5 The experiment

In order to respect the individual rhythm of learning, participants were given general recommendations on the organization of study time. The instructions referred to theoretical aspects regarding ultradian rhythm, the effort curve, active breaks, and practical aspects regarding elements of plastic language, graphic exercises, and execution of graphic exercises.

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*Active breaks* during individual study were recommended as part of the experiment: 5 minutes of spontaneous graphic exercises, simple or combined, at the beginning of the effort curve; at each 50 minute interval, a 5-10 minutes of graphic exercises based on spontaneous forms or made with serrated wheel with disk; and other 10-15 minutes of graphic exercises made on elaborated forms at the end of the study period. Participants were asked to write in a protocol the duration of time allocated to mobilizing for task (the time necessary for beginning the task), the time allocated to individual study in a day, the frequency of active breaks (adapted to individual rhythm).

### 3.6 Findings

The Wilcoxon test for the differences of ranks of two paired samples showed significant differences for all of the seven measured dimensions, before and after the intellectual training.

The main hypothesis was confirmed, after participating at the intellectual training, students reported using better learning strategies. A surprising finding was that participants recorded a higher level of extrinsic motivation after the experimental intervention, when only intrinsic motivation was expected to differ significantly.

Table 1 Pretest values

|     | Pretest |          |     |     |
|-----|---------|----------|-----|-----|
|     | Mean    | Std. Dev | Min | Max |
| TM  | 1,55    | ,65      | 1   | 3   |
| IM  | 1,10    | ,31      | 1   | 2   |
| EM  | 2,38    | ,49      | 2   | 3   |
| SP  | 1,89    | ,69      | 1   | 3   |
| TIS | 1,34    | ,47      | 1   | 2   |
| MTS | 1,44    | ,61      | 1   | 3   |
| SL  | 1,51    | ,50      | 1   | 2   |

Table 2 Post-test values

|     | Posttest |          |     |     |
|-----|----------|----------|-----|-----|
|     | Mean     | Std. Dev | Min | Max |
| TM  | 3,68     | ,75      | 2   | 5   |
| IM  | 2,61     | ,70      | 1   | 4   |
| EM  | 3,80     | ,57      | 3   | 5   |
| SP  | 3,53     | ,68      | 2   | 5   |
| TIS | 3,44     | ,54      | 2   | 4   |
| MTS | 4,40     | ,57      | 3   | 5   |
| SL  | 3,61     | ,53      | 3   | 5   |

Table 3. Statistical significance of ranks differences between pre-test and post-test

|     | Wilcoxon Rank Test        | p     |
|-----|---------------------------|-------|
| TM  | <b>-6,111</b>             | <.001 |
| IM  | <b>-5,845</b>             | <.001 |
| EM  | <b>-5,787<sup>b</sup></b> | <.001 |
| SP  | <b>-6,017</b>             | <.001 |
| TIS | <b>-6,177</b>             | <.001 |
| MTS | <b>-6,065</b>             | <.001 |
| SL  | <b>-6,098</b>             | <.001 |

One of the most important results is that students improved their school performance after following the training.

Observed differences are significant even when taking gender of participants into consideration. Both boys and girls record improvements in using learning strategies after the experimental intervention. Mann Whitney test for independent sample showed no significant differences between boys and girls for none of the measured dimensions.

Table 4 Statistical significance of ranks differences between pre-test and post-test, according to gender

|                             |                               | gender              |                        |                     |                        |
|-----------------------------|-------------------------------|---------------------|------------------------|---------------------|------------------------|
|                             |                               | masculin            |                        | feminin             |                        |
|                             |                               | Z                   | Asymp. Sig. (2-tailed) | Z                   | Asymp. Sig. (2-tailed) |
| Posttest-Pretest            | TM                            | -4,378 <sup>b</sup> | ,000                   | -4,311 <sup>b</sup> | ,000                   |
|                             | IM                            | -4,199 <sup>b</sup> | ,000                   | -4,104 <sup>b</sup> | ,000                   |
|                             | EM                            | -4,104 <sup>b</sup> | ,000                   | -4,118 <sup>b</sup> | ,000                   |
|                             | SP                            | -4,202 <sup>b</sup> | ,000                   | -4,416 <sup>b</sup> | ,000                   |
|                             | TIS                           | -4,388 <sup>b</sup> | ,000                   | -4,413 <sup>b</sup> | ,000                   |
|                             | MTS                           | -4,377 <sup>b</sup> | ,000                   | -4,249 <sup>b</sup> | ,000                   |
|                             | SL                            | -4,399 <sup>b</sup> | ,000                   | -4,266 <sup>b</sup> | ,000                   |
|                             | a. Wilcoxon Signed Ranks Test |                     |                        |                     |                        |
| b. Based on negative ranks. |                               |                     |                        |                     |                        |

TM = management of time, IM = intrinsic motivation, EM = extrinsic motivation, SP = school performance, TIS = time allocated to individual study, MTS = time necessary for mobilizing for task solving, SL = and satisfaction level.

According to the type of living, participants record similar positive effects of the training, either they live with their parents or in the students house. Learning strategies optimize both for students living with their parents (LP) and those living in the students house (LSH). Mann Whitney test for independent samples showed no significant differences between the two types of livings (LP and PSH), for none of the measured dimensions.

Table 5. Statistical significance of ranks differencens between pre-test and post-test, according to LP/LSH

|                               |     | LP                  |                        | LSH                 |                        |
|-------------------------------|-----|---------------------|------------------------|---------------------|------------------------|
|                               |     | Z                   | Asymp. Sig. (2-tailed) | Z                   | Asymp. Sig. (2-tailed) |
| Post-test- pre-test           | TM  | -4,771 <sup>b</sup> | ,000                   | -3,943 <sup>b</sup> | ,000                   |
|                               | IM  | -4,744 <sup>b</sup> | ,000                   | -3,502 <sup>b</sup> | ,000                   |
|                               | EM  | -4,656 <sup>b</sup> | ,000                   | -3,493 <sup>b</sup> | ,000                   |
|                               | SP  | -4,667 <sup>b</sup> | ,000                   | -3,862 <sup>b</sup> | ,000                   |
|                               | TIS | -4,818 <sup>b</sup> | ,000                   | -3,943 <sup>b</sup> | ,000                   |
|                               | MTS | -4,776 <sup>b</sup> | ,000                   | -3,785 <sup>b</sup> | ,000                   |
|                               | SL  | -4,815 <sup>b</sup> | ,000                   | -3,787 <sup>b</sup> | ,000                   |
| a. Wilcoxon Signed Ranks Test |     |                     |                        |                     |                        |
| b. Based on negative ranks.   |     |                     |                        |                     |                        |

Considering the association between learning strategies dimensions, we obtained the following results based on Spearman correlation coefficients:

-There is a positive significant association between time management and intrinsic motivation,  $\rho(45) = .363$ ,  $p = .012$ , students who efficiently mobilize their effort report a higher level of intrinsic motivation.

-There is a significant positive association between intrinsic motivation and learning satisfaction,  $\rho(45) = .34$ ,  $p = .019$ . Students with a high level of intrinsic motivation, are greater satisfied then those extrinsic motivated.

-There is a significant negative association between time allocated to study and the level of mobilization for the task,  $\rho(45) = -.324$ ,  $p = .026$ . Students allocating more time to study, mobilize themselves harder in solving the task. This result might show the tendency of using inadequate the time resource, the tendency to postpone task solving and to allocate the resources disproportionate.

#### 4. CONCLUSIONS

The main hypothesis of the study was confirmed, which allow us to conclude that using graphic exercises as an active break during individual study leads to improved time management, has a positive effect on school performance, on learning satisfaction and on motivation.

Subjectivity bias in answering the questionnaire, memory limits in making weakly inventory of activity, the presumption of inconsistency in using active breaks at recommended frequency, reduced contact with participants during intervention are some of the limits of our investigation.

Still, one must stress the advantages of intellectual training such as: organizing learning activity increased time allocated for individual study, intrinsic motivation, increased satisfaction with the result, neuro-psyhic relaxation through active breaks that maintain the effort curve close to maximal level, the easiness of using this type of active break.

Obtained results may constitute a first step into a new line of research in the area of improving time management in learning.

Graphic exercise used as an active break in time management  
(intellectual training)

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