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DIDACTIC METHODS FOR ACHIEVING IMPROVED CREATIVITY IN TEACHING GRAPHIC DESIGN IN SECONDARY SCHOOL FORMAL EDUCATION

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Abstract: *In teaching and learning graphic design in a secondary vocational school, we mainly use digital tools for both teaching and learning. According to the curriculum, students in the 2nd and 4th years learn to design various printed and animated content. The work is very creative and students need to be able to visualize their ideas in an appropriate way and with appropriate tools, which is a challenging and complex process. For the teachers, it is a challenge to give instructions for a specific task and to evaluate it, and for the students, it is a challenge how to solve it in the most successful way. With the rapid development of technology and the unstoppable updating of programs, problems arise because students must constantly familiarize themselves with new programs and the variety of new digital tools and techniques, while thinking about how to conceptualize and visualize a particular idea in accordance with the task at hand. As a result, they are unable to focus on their own creativity as they have to constantly learn how to use digital tools that enable them to create a design product. The goal of the research is to create measurable and verifiable data that will help apply an appropriate didactic method to achieve optimal results when teaching graphic design. When teaching the subject matter in the practical classes of graphic design, teachers mainly use 3 didactic methods: Demonstration methods, text methods and video methods (Figure 1). In the research, we determined which didactic method is the most effective in achieving a certain learning goal according to the set task. The methodology included experimental work and interviewing students. In the experimental part, students solved tasks using the method of all three didactic methods and then completed a questionnaire. The survey was completed by 56 students (2nd and 4th year students). Students rated each didactic method on a 5-point Likert scale. The results obtained were statistically analysed using IBM SPSS Statistics. The results of the analysis provide an interesting insight into the creative process of the students in relation to the learning methods. The results of the study show that the choice of an appropriate didactic method or a combination of didactic methods is important both for a student's successful and creative implementation of a design task and for the effective teaching of graphic design.*

Key words: graphic design, high school, formal education, didactic methods, creativity, digital learning tools

1. INTRODUCTION

In graphic design classes, students mainly use digital tools while acquiring knowledge in high school. It is this digital technology that is leading to major changes in the way students communicate and relate to each other, as well as the way they learn (Bates, 2019).

In his work, Teaching in a Digital Age, Bates points out that society requires educators to develop different types of knowledge and skills needed by students in the digital age. To develop these knowledge and skills, educators must establish clear learning outcomes and select teaching methods that support the development of these knowledge and skills.

All of this requires practice and feedback. On the other hand, students should be given ample opportunity to practice these skills. This requires a move away from the traditional model of information delivery and toward more learner-centred teaching and new assessment methods that measure both skills and content mastery (Bates, 2019).

Today's generation of students are "digital natives" (Prensky, 2001), meaning they use digital devices for learning and entertainment. As being "native speakers" of the digital language of computers, video games, and the Internet, they generally have no problems using complex technological devices.

Therefore, it is necessary to change the way of learning and the implementation of certain formal education requirements in parallel with the development of technology, especially in classes where we use digital tools and computer graphics. (Nurannisaa et al., 2020).

Learning graphic design is based on knowledge of computer graphics, which is the basic technology and infrastructure of all programs whose function is visual design, drawing and creation (Gabrijelčič Tomc, Kočevar & Iskra, 2021).
The teaching of computer graphics is also based on the experiential learning model. According to this model, teaching and learning are inseparable; theory and practice are organically linked. Experiential teaching requires students to connect theory with extracurricular practice, to learn as much as possible about the theory and application of computer graphics software, to explore their own thoughts and feelings from different perspectives, and finally to creatively design specific content (Fleischmann, 2013).
In graphic design teaching, in addition to experiential teaching, we can also talk about problem-based teaching and research-based teaching. These are two forms in which students focus on exploring and solving a particular problem, whether fictional, theoretical, or practical (Grmek & Krečič, 2011).
The study, which involved 33 students, was conducted in the first year of a computer graphics school for visual communication design in China. The research used Adobe Illustrator software to create 2D and 3D designs. The results of the study show that students have no problems with accessing and using complex technologies; information related to content knowledge in learning computer graphics was stored through the Internet. The challenge is to guide students so that the information they receive meets their learning needs. In addition, the study showed that students are more interested in the design process than in computer-aided design techniques and software. This is due to the presence of various online tutorials that facilitate them to learn and explore the technical use of computer software (Nurannisaa, 2020). Graphic design as digital media art is a combination of multimedia technology and artistic design. It is based on the technical means of information and digitization in multimedia technology and combines the concept and method of artistic design (Bonsu, Chisin & Cronjé, 2020).
Given the digital world in which education is increasingly embedded, there is much talk about creativity, which is closely linked not only to the world of art and product design, but also to science, engineering, innovative thinking, and problem solving. There is an increasing demand for creative people in the labour market (Ambrose, 2017).
Education, knowledge and creativity are gradually becoming the driving force of new social, cultural and educational structures. In 2019, data were collected from a sample of 3519 Hong Kong Chinese students aged 11 to 15 from 16 schools. Using the data, this study examined the sources, values, and limitations of fostering creativity in young learners in formal education. The results show that there is a lack of awareness among teachers and parents about the importance and developmental benefits of creativity. Students should be given more opportunities to express their creativity within and outside of the school environment. The majority of students in this study felt that the most important component of the value of a creative education is to train creative minds for the future. Questions are raised about how to bring the arts and sciences closer together. The study also showed that students value learning about the arts that could guide their creativity as an educational experience. Students' creativity should be as important as passing a test or exam (Wai-Chung, 2020).
When teaching with digital learning tools, it is important to promote appropriate cognitive processing in learners without overloading their cognitive systems. This can be achieved by mastering essential processing and promoting generative processing (Dumont, Istance & Benavides, 2010). The cognitive theory of multimedia learning is based on the construction of knowledge within which learners actively construct mental representations to make sense of their experiences. When teaching with modern digital tools, it is the method and not the medium that matters (Mayer, 2021).
The method of teaching is the subject of didactics, an independent scientific discipline within educational science that deals with questions of education, learning, and teaching. Didactic or teaching methods are scientifically and practically tested ways of communication between teachers and learners, classified according to the source of information, purpose, function and dominant processes (Grmek & Krečič, 2011).
Our research aimed to determine which teaching method helps students complete a task more efficiently and which method makes students more creative, more satisfied with the final product, and more successful in mastering a particular computer program. In this study, we looked more closely at the effects of the three basic learning methods and how they are combined. These teaching methods include:
The text-based method is one of the document-based teaching methods. A prerequisite for its use is the ability to read functionally - reading comprehension and mental processing of information. It is important for the teacher to check in various ways whether the students have adequately understood the text in relation to the set objectives, which requires the integration of this teaching method with other methods, e.g. the practical method, the interview method... (Glossary of Education Terminology, 2008-2009).

In didactics, the teaching method of demonstration is defined as a way of working in the classroom in which the teacher (or students) demonstrates static objects (pictures, models, drawings, etc.) or dynamic phenomena and activities that can be practical (motor activities and practical tasks), sensory and expressive (speaking, reading, writing, painting, singing, dramatic expression, etc.) and intellectual. (Glossary of Education and Training Terms, 2008-2009).
The video method is a video explanation that follows the principles of the explanation method. The asynchronous video interpretation method naturally follows different principles than the synchronous application of this method. The video may include "real" video footage or screen recordings in the interpretation. Typically, video interpreting involves a combination of all the above methods (Pesek, Lipovec & Zmazek, 2020). All methods are associated with the explanatory method or the Socratic method, which has traditionally been one of the most widely used and also relatively effective teaching methods in various fields (Overholser, 2018).
The purpose of the present study was to investigate the factors and teaching methods that influence students' creativity and effective task performance in graphic design classes in formal education. Above all, the goal of the research is to find optimal teaching methods for teaching graphic design in practical education based on measurable and verifiable statistical data. And to do so in such a way that students achieve their learning goals, become more creative, and at the same time are satisfied with their own work.
Figure 1 depicts the interweaving of learning methods at different levels necessary to implement a creative task in the practical teaching of graphic design in formal education.

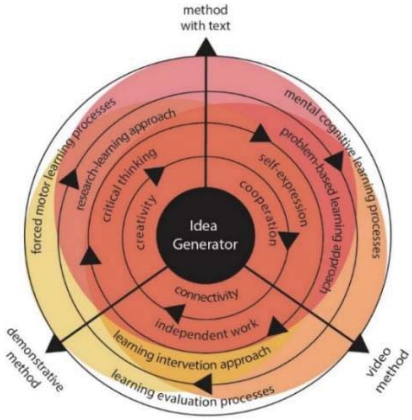


Figure 1: Demonstration of didactic methods that intertwine with each other and thus influence the visualization of the idea. Summarized from Didaktika by Blažić et al., 2003

We set three hypotheses:
H1: In terms of learning methods, the combined learning method, namely demonstration and video, is the one that makes it easiest for students to work and visualise their own ideas.
H2: We hypothesise that there is a difference in the popularity of learning methods between lower- and upper-year students (2nd and 4th year) in terms of the popularity of learning methods.
H3: We assume that students prefer to follow the instructions for the task on their mobile phone.

2. EXPERIMENTAL PART

2.1 Research sample

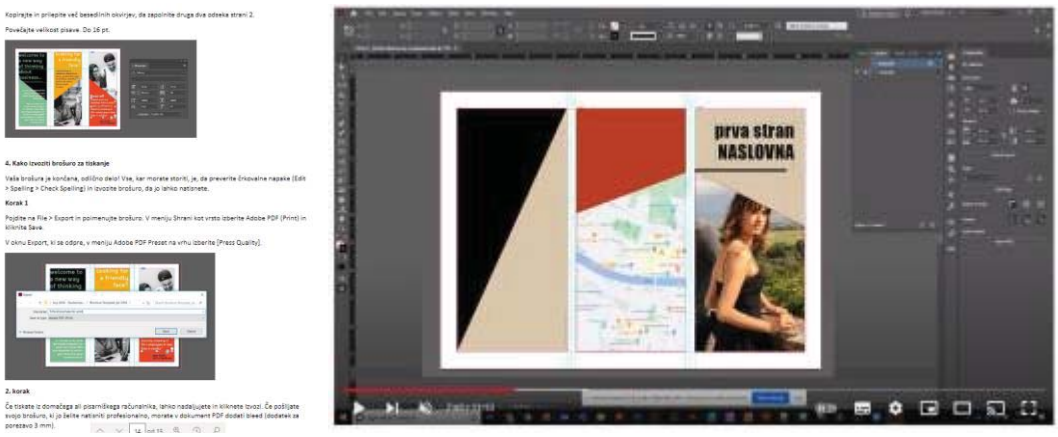
56 students participated in the study; 30 2nd year students (aged 15-16 years) and 26 4th year students (aged 17-18 years). The students participated in the study voluntarily.

2.2 Data collection procedure

Data were collected within 15 school hours. The survey was conducted during a practical graphic design lesson as part of a regular lesson.
The research included: lesson preparation, content preparation, tasks modelled on different teaching methods, questionnaires, teacher observation, and analysis of results. The teaching material was taught

using demonstration, video and text teaching methods. We also used combinations of teaching methods such as the demonstration method, the video method, and the text method. For the study, we selected the areas where new learning materials are introduced that are consistent with the curriculum, in both the 2nd and 4th years:

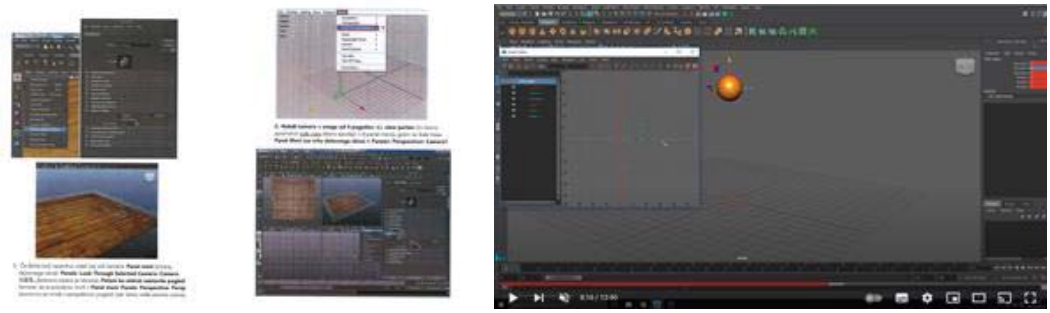
- In the 2nd year, students are introduced to design and learn to design single and multi-page printed materials such as posters, brochures, magazines, books, newspapers, calendars, etc.
For this purpose, they learn how to use InDesign, a programme for designing printed materials. Since the programme is new to them, they learn it gradually.
Figure 1 shows an example of written instructions and a video for this task.



Learning goals: design a classic advertising flyer in Adobe InDesign and Adobe Photoshop; tri-fold.
Informative goals: know the design and technical standards of text layout for different media, ...
(KZ Graphic Design, 2020)

Figure 1: An example of written instructions and a video of the task and learning goals for the 2nd year task

- In the 4th year, students learn about animation. Animation creation is a project work. They learn the new programmes Adobe Animate, Adobe Premiere and Mayo to create 3D animations. The assignments are very complex and require the use of new skills, processes, and tools. Figure 2 shows the instructions for the assignment and the learning objectives for the assignment.



Learning objectives: create a simple 3D animation in Maya; bounce a colored ball
Informative objectives: knowledge of animation and the basic creative principles of animation editing (primary editing, time sequence, spatial relationships, contextual relationships, contrasts of shapes and forms) ... Knows the technical basics of animation and the moving image. (KZ Graphic Design, 2020)

Figure 2: An example of written instructions and a video of the task and learning goals for the 4th year task

Students work on these assignments in the computer lab, where they have their own computer and computer programmes in their own Adobe Cloud.

Teachers introduce each assignment, show examples of, for example, a flyer or animation using projection, and then guide students step-by-step through the process of creating the flyer or animation. In addition, students who are absent from class or cannot do it all are given the opportunity to work on the assignment independently without the teacher's presence and support. For this purpose, they have written texts or videos ready to solve the task.
Students use digital technology to create products, using tools and processes such as Adobe InDesign and Photoshop for 2D tasks and Autodesk Maya for 3D modelling and animation.
Figure 3 shows the layout of the classroom where the practical lessons take place.

Figure 3: Computer layout in the classroom

2.3 Exploratory instrumentarium

The study used a survey and an observation protocol.
The survey was used to determine the popularity of the selected methods in the classroom.
The anonymous focus group survey was conducted using the online tool 1ka and sent via email. Students completed the online survey after school from 5/10/2022 to 5/20/2022.

The online survey included:
- Part 1 of the survey: students completed demographic information.
- Part 2 of the survey: students answered questions about where they get inspiration to create a product/practical task and how they relax when creating a product/practical task, and completed two questionnaires consisting of four statements with the option to add a second statement. Each statement was rated by participants on a 4-point Likert scale (1 - never; 2 - rarely; 3 - often; 4 - always).
- Part 3 of the survey: students responded to five sets of questions, each of which represented a specific teaching method or combination of teaching methods based on their previous experience working in a practical graphic design course; three examples are provided: When I follow the teacher's demonstration of the procedure for designing a task and I create it myself on the fly, ...
The statements in the questionnaire were the same in each set; each statement was rated by the participants on a 5-point Likert scale (1 - never; 2 - rarely, 3 - often; 4 - always; 5 - completely true).

The observation protocol was used to monitor the effectiveness of the chosen methods by the teacher instructing the students.

2.4 Research methods

A quantitative method of educational research was used for the study.
Statistical analysis of the results was carried out in IBM SPSS statistics and 1ka data analysis.
The transfer of the empirical data into SPSS allowed us to perform the statistical analysis. We analysed the characteristics of the variables and presented them in tables and graphs (figures) along with frequencies, arithmetic means, and standard deviations.
Cronbach's alpha (Table 1) was used to evaluate the reliability of the measurement or the internal consistency of the measurement scale. The test of Cronbach's alpha evaluates the reliability of a measurement (Cronbach, 1989). From the table, it can be seen that the Cronbach's Alpha test of the reliability of a measurement shows that the internal consistency of the factors is adequate, since the value of the Cronbach's Alpha test for all factors combined is greater than 0.70.

Table 1: Reliability statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
,968	,972	7*

*7 sets of all factors (Q4, Q5, Q7, Q9, Q11, Q13, Q15)

A Mann-Whintey (M-W) test was used to test for differences between 2nd and 4th year.

3. RESULTS

3.1 Analysis of the research with students

Assessing the popularity of learning methods

Descriptive statistics for each learning method were compiled and compared. Table 2 shows the groups of responses according to the selected factors. The results obtained with the Likert scale were summed for each group, the arithmetic mean was calculated, and the percentage was determined. One hundred percent means a value of 5, a value of 2.5 means 50 percent, and the remaining calculations were performed analogously.

Table 2: Results of the descriptive statistics "Teaching methods"; Q7 (demonstration method), Q9 (video method), Q11 (text method), Q13 (combined method with demonstration and video method), Q15 (combined method with demonstration and text method)

	Q7*		Q9*		Q11*		Q13*		Q15*	
	M	SD	M	SD	M	SD	M	SD	M	SD
I design the assignment without problems	3,3	0,9	3,5	0,8	**2,9**	1,0	**3,8**	0,8	3,5	1,0
I get the job done quickly	3,0	0,9	3,4	0,9	**2,8**	1,0	**3,7**	0,9	3,3	1,0
I have more possibilities to visualise my own ideas	3,4	0,8	3,4	0,9	**3,0**	1,0	**3,9**	0,8	3,6	1,0
I can easily visualise the idea	3,2	1,0	3,2	0,9	3,1	1,0	**3,8**	0,8	3,5	0,9
I have a better understanding of computer software, procedures and tools	3,6	1,0	3,9	0,7	3,1	0,9	**4,0**	0,8	3,6	0,9
I am happy to design the assignment	**3,6**	0,7	3,4	0,8	3,3	0,8	3,5	0,9	3,5	0,9
I feel stressed and insecure	2,6	1,0	2,7	1,0	**3,0**	1,3	**2,3**	1,0	2,4	1,0
I am struggling to follow the instructions	2,4	0,9	2,4	0,8	**2,7**	1,1	**2,0**	0,7	2,2	0,8
I am not creative	2,4	1,1	2,2	0,9	**2,5**	1,1	**2,1**	0,9	2,1	0,9
I am not satisfied with the finished product	**2,8**	1,2	2,7	1,0	2,6	1,1	**2,3**	1,2	2,4	1,0
other	I need additional help, I am satisfied with the final product, I am not meeting my expectations (Q7, Q9, Q11, Q13, Q15); the instructions confuse me(Q11)									

Q7* When I follow the teacher's demonstration of the process for designing a task and create it myself,
Q9* When I help myself to design the task by watching a video of the workflow, using the tools,
Q11* When I use written instructions and workflows to help me design the task,
Q13* When I follow the teacher's demonstration of the process of creating the task and later help myself with written instructions/procedures,
Q15* When I follow the teacher's demonstration of the process for creating the assignment and later help myself with the video instructions/procedures

***Links that are statistically significant are shown in bold**

Analysis of the age difference between the students

In addition, we were interested in whether students' responses differed depending on whether they were commuters or not with respect to each variable describing the visual characteristics of each mobile self-learning application. The results are presented in Table 9.

Table 3: Summary of Mann-Whintey (M-W) test results between 2nd and 4th year students on the popularity of teaching methods (Q7, Q9 and Q11)

Q7*, Q9*, Q11		Q7		Q9		Q11	
		M-W test		M-W test		M-W test	
		$\chi 2/P$	$\bar{R}$	$\chi 2/P$	$\bar{R}$	χ2/P	$\bar{R}$
I design the assignment without problems	2nd year	319,000/ 0,583	26,00	250.500/ 0.064	23.64	319,500/ 0,596	26,02
	4th year		28,21		31.06		28,19
I get the job done quickly	2nd year	307,000/ 0,435	25,59	226.000/ 0.022	22.79	272,500/ 0,162	24,40
	4th year		28,71		32.08		30,15
I have more possibilities to visualise my own ideas	2nd year	319,500/ 0,589	26,02	312.000/ 0.502	25.76	341,500/ 0,905	26,78
	4th year		28,19		28.50		27,27
I can easily visualise the idea	2nd year	346,500/ 0,978	26,94	237.000/ **0.037**	**23.17**	279,000/ 0,205	24,62
	4th year		27,06		**31.63**		29,88
I have a better understanding of computer software, procedures and tools	2nd year	332,500/ 0,773	27,53	288.000/ 0.234	24.93	282,000 /0,219	24,72
	4th year		26,35		29.50		29,75
I am happy to design the assignment	2nd year	347,000/ 0,985	26,97	218.000/ **0.014**	22.52	293,500/ 0,306	25,12
	4th year		27,04		32.42		29,27
I feel stressed and insecure	2nd year	317,000/ 0,567	28,07	337.500/ 0.846	26.64	333,500/ 0,791	26,50
	4th year		25,71		27.44		27,60
I am struggling to follow the instructions	2nd year	345,500/ 0,962	27,09	303.000/ 0.398	25.45	259,000/ 0,104	23,93
	4th year		26,90		28.88		30,17
I am not creative	2nd year	292,500/ 0,307	25,09	339.500/ 0.874	26.71	240,000/ **0,048**	**23,28**
	4th year		29,31		27.35		**31,50**
I am not satisfied with the finished product	2nd year	335,000/ 0,812	26,55	284.500/ 0.239	29.19	342,000/ 0,912	26,79
	4th year		27,54		24.35		27,25
other	2nd year	259,500/ 0,060	23,95	212.000 /0.006	22.31	221,000/ 0,010	22,62
	4th year		30,69		32.67		32,29

Q7* When I follow the teacher's demonstration of the process for designing a task and create it myself,
Q9* When I help myself to design the task by watching a video of the workflow, using the tools,
Q11* When I use written instructions and workflows to help me design the task,
***Links that are statistically significant are shown in bold**

Table 4: Summary of Mann-Whintey (M-W) test results between 2nd and 4th year students on the popularity of teaching methods (Q13 and Q15)

Q13*, Q15*		Q13		Q15	
		M-W test		M-W test	
		χ2/P	$\bar{R}$	χ2/P	$\bar{R}$
I design the assignment without problems	2nd year	298,000/ 0,357	25,28	284,000/ 0,236	24,79
	4th year		29,08		29,67
I get the job done quickly	2nd year	315,500/ 0,550	25,88	275,000/ 0,180	24,48
	4th year		28,35		30,04
I have more possibilities to visualise my own ideas	2nd year	280,000/ 0,210	24,66	264,500/ 0,123	24,12
	4th year		29,83		30,48
I can easily visualise the idea	2nd year	291,000/ 0,290	25,03	267,500/ 0,133	24,22
	4th year		29,38		30,35
I have a better understanding of computer software, procedures and tools	2nd year	294,500/ 0,322	25,16	282,000/ 0,223	24,72
	4th year		29,23		29,75
I am happy to design the assignment	2nd year	247,500/ 0,056	23,53	271,000/ 0,156	24,34
	4th year		31,19		30,21
I feel stressed and insecure	2nd year	251,000/ **0,075**	**23,66**	249,000/ **0,071**	**23,59**
	4th year		**31,04**		**31,13**
I am struggling to follow the instructions	2nd year	208,000/ **0,009**	**22,17**	231,000/ **0,030**	**22,97**
	4th year		**32,83**		**31,88**
I am not creative	2nd year	278,500/ 0,198	24,60	309,500/ 0,478	25,67
	4th year		29,90		28,60
I am not satisfied with the finished product	2nd year	306,000/ 0,435	25,55	304,500/ 0,428	25,50
	4th year		28,75		28,81
other	2nd year	205,000/ 0,004	22,07	223,500/ 0,016	22,71
	4th year		32,96		32,19

Q13* When I follow the teacher's demonstration of the process of creating the task and later help myself with written instructions/procedures,

Q15* When I follow the teacher's demonstration of the process for creating the assignment and later help myself with the video instructions/procedures

***Links that are statistically significant are shown in bold**

Monitoring the task instructions by medium

Figure 5 shows that most students follow the instructions for the practical task on the computer.

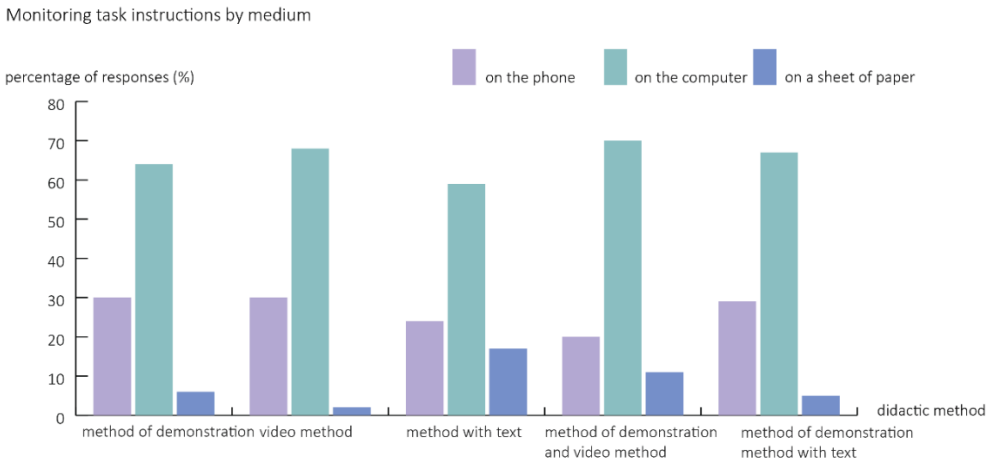


Figure 5: Monitoring task instructions by medium

3.2 Analysis of the observation protocol

2nd year assignment: design a classic advertising flyer in Adobe InDesign and Adobe Photoshop; tri-folded. The most representative results were selected. Figures 6, 7, and 8 show the students' products created using the video method, the text method, and the demonstration method.

Figure 6: Student product; video method

Figure 7: Student product; text method

Figure 8: Student product; demonstration method

Task in 4th year: create a simple 3D animation in Maya; bounce a coloured ball. The most representative results were selected. Figure 9 shows the students' products created with the video method, the text method and the demonstration method.

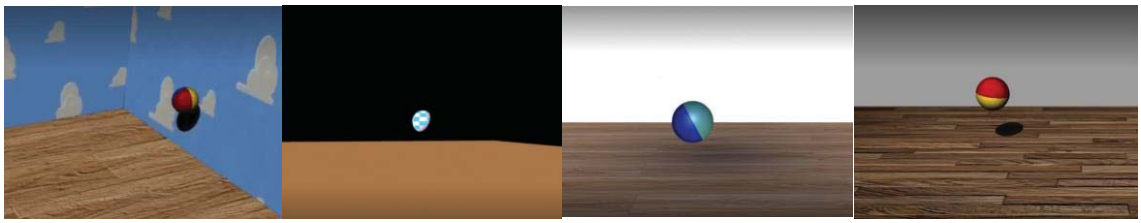


Figure 9: Student products; combination of demonstration, text and video methods

Students' mood while creating according to the teaching method?

Students have condensed 5 school hours with 5-minute breaks, so after the 4th school hour their concentration and motivation to work drops dramatically. In 2nd grade, only 6 students listen to music while working on a practical task, while in 4th grade, 8 students are working on a hands-on task at the beginning of 4th grade. Students who complete the task early and are satisfied with it help other students who are behind on the task and do not understand the process, tools, etc.

Quality of products in terms of teaching method?

The highest rated products are those created with the help of a teacher and using the demonstration method. These products are technically and esthetically sophisticated and show the development of the student's own style. In the video method, they create the task faster but with lower quality. In the text-based method, they do not read the instructions carefully and are therefore too sloppy and consequently unmotivated to work, as their sloppiness makes it difficult for them to match the technique of the learning materials with the visualization of their own ideas.

Speed of the task in relation to the teaching method?

Within the allotted time (10 school hours), students work on the product as quickly as possible using the demonstration method. Those who are more engaged watch a video that helps them with the technological processes and work with the software to visualize their own ideas.

4. DISCUSSION

In Table 2, we present the 5 factors of "learning method," which includes 11 variables that we used to assess the popularity of each method. The surveyed students indicate that they use a teaching method with demonstration, which they supplement with a video method: they solve the practical task without problems (M = 3.8; SD = 0.8); they solve the task the fastest (M = 3.7; SD = 0.9); they visualize their idea easily (M = 3.8; SD = 0.8); they have more opportunities to visualize their own idea (M = 3.9; SD = 0.8); they understand the computer program, procedures and tools more easily (M = 4.0; SD = 0.8). However, they find the most enjoyment in creating a task when the teacher demonstrates the process (M = 3.6; SD = 0.7), and they are also most satisfied with the final product when this process of instruction is used (M = 2.8; SD = 1.2). Students have the most difficulty when the teacher gives instructions for the task in written form; 1 student reported being confused by the written instructions. In general, students like the text method the least.

The results show that there are no differences between Year 2 and Year 4 students in the way they work with the demonstration method (Q7). A statistically significant difference is found when working with the video method (Q9), as Year 4 students ($\bar{R}$ = 31.63) are, on average, happier to design the task and better at visualizing their idea than Year 2 students. A statistically significant difference is also found when working with the text method (Q11); Year 4 students ($\bar{R}$ = 31.50) are on average less creative than Year 2 students ($\bar{R}$ = 23.28) when following written instructions to complete the task.

There is also a statistically significant difference in the way they work with the combined video and demonstration method (Q13); Year 4 students are on average more stressed ($\bar{R}$ = 32.83), feel more insecure and find it more difficult to follow the instructions to work on the task than Year 2 students ($\bar{R}$ =

22.17) when they design the task in such a way that the teacher demonstrates the process of working on the task and then gives the instructions in the form of a video. The same is true for the way students receive the material in a combined demonstration and text method (Q15); Year 4 students ($\bar{R}$ = 31.13, $\bar{R}$ = 31.88) are on average more stressed, feel more uncertain, and find it more difficult to follow the instructions to solve the task than Year 2 students ($\bar{R}$ = 31.13, $\bar{R}$ = 31.88, $\bar{R}$ = 31.88). They are more stressed ($\bar{R}$ = 23.59, $\bar{R}$ = 22.97) when they do the task in such a way that the teacher demonstrates the process of the task and then gives written instructions.
We have confirmed hypothesis 1 that students find the combined teaching method of demonstration and video easiest to work with and visualize their own ideas. However, they are most satisfied and happy with their product when they follow the teacher's demonstration of the task, as they need the teacher's support in the form of discussion and further clarification of the task. Also, based on the final products, we can see that students were most creative when they designed the task following the teacher's demonstration and with the help of the video.
We also confirmed hypothesis 2 that there was a statistical difference between the 2nd and 4th grade students.
However, hypothesis 3 was rejected because students chose to follow the instructions for the task by computer rather than by cell phone, as hypothesized.

5. CONCLUSION

Compared to other creative disciplines such as fine arts and architecture, graphic design is a young profession. Formal education in this field should follow the trend of technological development and consequently the current stylistic trends. Educators face a challenging task as they need to provide students in formal education with appropriate training that fosters their creative potential and appropriate use of digital learning tools while meeting the established formal learning objectives.
In our study, we found that the teaching method of demonstration combined with the video method is a very effective method to help students achieve their learning objectives in practical graphic design classes. This combination of teaching methods demonstrates that students learn most effectively when they have to build their own knowledge structures and mental models. We also found that there is a statistical difference between age groups in the popularity of each learning method. It is also important to note that students prefer to follow instructions on the computer rather than on the cell phone.
Mayer (Mayer, p. 168) states that lesson planning should not only involve the delivery of information but should present that information in a way that encourages learners to engage in appropriate cognitive processing, which can certainly be usefully applied to the teaching of graphic design in formal education.

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