

THE IMPACT OF INTERACTIVE METHODS ON ONLINE DIDACTIC ACTIVITIES

Luiza Enachi-Vasluianu

University of Bucharest, Romania

Flavia Mălureanu

University of Bucharest, Romania

Abstract. *The period of online didactic activities, caused by Sars-CoV-2 pandemic, offered teachers and students the opportunity to focus more on what is essential, on the elements with qualitative impact, on abilities and skills, rather than on content and peripheral elements (Botnariuc & Cucos, 2020). From this perspective, the use of interactive methods in teaching and in solving cooperative learning assignments was one of the strategies used by teachers to maintain interest in learning, to strengthen the teaching process and to promote intellectual, verbal, social and emotional exchanges among students.*

Our study focuses on the opinions of teachers from primary and lower secondary schools regarding the impact, the effectiveness of interactive methods in online didactic activities. The study involved focus group discussions and the selection of the most often used interactive methods (clustering technique, quadrants, conceptual maps, starbursting, brainstorming, quintet, think-pair-share, lotus blossom technique etc.) to be transposed into items in the questionnaire used in the research. The information gathered was interpreted using the SPSS analysis. The results of the study provide a data base and a possible framework to facilitate eLearning and a possible working strategy for primary and lower secondary school teachers to ensure students effective interactive learning experiences.

Keywords: *eLearning, interactive methods, online learning.*

Introduction

The quality of learning is based, among others, on the quality of communication between teacher and student and between student and peers. Students learn “to build” their knowledge based on their own understanding, and this personal endeavour is favoured, to a great extent, by the interaction with other learners. Students need socializing, communicative interaction with peers, support and cooperation in dealing with school assignments. During the pandemic online activity, teachers tried to maintain these communication networks open and to intensify learning through cooperation, using didactic techniques with emphasis on students’ interaction. Applied online, these techniques offer students the possibility to produce, analyse and organize knowledge, ideas, skills and competences.

The impact of the interactive methods refers to effects of cognitive/intellectual nature, as well as those of socio-affective nature. Thus, cognitive effects aim at developing the knowledge system, superior cognitive abilities (divergent and convergent thinking, critical thinking, lateral thinking), communication abilities (argumentative, contextual), creativity, all quantified in the results of oral or written assessments. On the other hand, the socio-affective effects aim at developing group work skills, the ability to adapt to different situations, to react to various challenges etc. Also, the impact of online didactic methods aims at students' abilities to correctly perform their school tasks, to be actively and consciously involved in the application of interactive methods in online activities.

Our study will limit the research to the analyses of some selected interactive learning techniques which are frequently used in online didactic activities at primary school and gymnasium as means of maintaining communicative interaction among peers so as to ensure efficient learning for students.

Literature review

Brainstorming implies individual search and group elaboration. It is a didactic cooperative technique developed in two stages: a) individual production of as many ideas as possible based on the task provided the teacher, b) analysis, assessment and selection of the most valid ideas. Brainstorming does not simply mean collecting creative ideas, but it requires rules such as “no evaluation of ideas during the brainstorming” and “no copyright on ideas” (Taras & Gonzalez-Perez, 2015). However, it is allowed to expand on someone else's idea.

Unlike brainstorming, which relies its value on quick generation of ideas as numerous responses, Think-Pair-Share is designed to offer a structured opportunity to reflect on a subject before voicing student's thoughts. Its purpose for the individual participant is to refine and clarify personal viewpoints, prepare arguments to support them before communicating them to others. The purpose for growth of a group is to share opinions honestly and openly (Holcomb, 2001). As a learning technique, it is effective as it incorporates the individual, small group and whole-group discussion. As the task or the question is provided by the teacher, the student works on it independently. Then the student shares his/her response with a partner. After clarifying and thinking through the responses, students provide them in whole group discussions, so that the entire class can benefit from the thinking of everyone else.

Starbursting is a form of brainstorming that focuses on generating questions rather than answers. It can be used iteratively with further layers of questioning about the answers to the initial set of questions. Its main objective is to enable a team to think about performance, to consider available options, to get as many connections among concepts, to rule out non-essential ideas. The technique debuts

with a central idea surrounded by a six-pointed star drawn in the middle of a large piece of paper. At the tip of each point of the star are written: “Who”, “What”, “Why”, “Where”, “When” and “How” (Oprea, 2006). Students brainstorm as many questions as possible about the idea starting with each of these words. The questions radiate out from the central star. Students are not allowed to provide answers to the questions. The final stage in the process is to emphasize the most interesting questions and appreciate the effort of the team work.

Lotus blossom technique focuses the power of brainstorming on areas of interest. It is a creative-thinking technique that helps students organize their thinking around significant themes, guiding them to explore a number of alternate possibilities and ideas. It starts with a central theme written in the centre of the diagram. Significant subthemes, components or dimensions of the main topic are written in eight surrounding circles which form the petals around the core of the blossom. In their turn, these subthemes may become main themes for other eight ideas, forming thus other eight lotus petals. In the end, the ideas from the petals are assessed and given the proper feedback (Bocoş, 2013). The technique is compatible with many disciplines and stimulates group work and students' creativity.

Essentially, concept mapping is a structured process, focused on a topic, involving input from one or more participants that produces an interpretable pictorial view (concept map) of their ideas and concepts and how these are interrelated. In other words, conceptual mapping is a visual organization and representation of knowledge. It shows concepts and ideas and the relationships among them. A concept map typically represents ideas and information as boxes or circles, which it connects with labelled arrows, often in a downward-branching hierarchical structure (Oprea, 2003). Concept mapping helps students think more effectively as a group without losing their individuality. It helps groups to manage the complexity of their ideas without trivializing them or losing detail.

The clustering technique is a type of non-linear brainstorming. It begins with a core word that triggers related terms that branch out from the central term. One term leads to another and another so as to create a complex network of various ideas, all related back in the same way to the core stimulus word. The purpose of the technique is to highlight the connections among the concepts, thus facilitating understanding and learning (Moise & Seghedin, 2008). The technique can be applied online with small groups and pairs.

The four quadrants is a technique of approaching a content based on four criteria, one for each quadrant. It is a means of summarising and synthesizing some informational content so as to fit a quadrant at a time. Thus, the teacher provides four tasks and the students are asked to draw four quadrants and solve a task for each quadrant. Another approach to the technique is that the teacher provides one task/ topic of discussion and students express different points of view on the topic for each quadrant (Dulamă, 2008).

The quintet, as a learning technique, is meant to develop critical thinking (Steele, Meredith & Temple, 1998, 32). It is a creative form of writing which consists of elaborating a short text, a poem by means of which some content is synthesized: a literary theme, a concept, an idea, some information previously learned. The quintet has a specific structure (Bocoş, 2013): the first line contains a key word, a noun most of the times; the second line is formed of two words, two adjectives describing the noun; the third line is made up of three verbs in gerund related to actions specific to the noun in the beginning; the fourth line is made up of four words describing the author's emotions for the topic; the fifth line contains one word expressing the essence of the topic. The quintet as learning technique is often used as online assignment, individually or in group. In case of working in pairs or in large groups, the poems can be created individually, then, through debate, students should opt for a few variants, evaluated as the most successful products.

Pick the Winner is a technique of learning through cooperation which involves finding a solution within the group, assessing it by another group, analysing two solutions (of the two groups, the assessor and the assessed) comparatively within reunited groups, establishing a hierarchy for the two solutions. The students are divided into groups and receive the same task to work on. The solutions are registered in writing on paper or digitally (Knapen, 2018). Then, each group switches with a nearby group and lets them evaluate their answer. After a few minutes, each set of groups merges and selects the best answer from the two choices, which will be presented to the complete class.

Methodology of research

The research objectives

The objectives of our study are: a) to identify a range of learning techniques which are frequently used in online didactic activities at primary school and gymnasium as means of maintaining communicative interaction among peers so as to ensure efficient learning. The selection of techniques was made starting from the discussions in focus groups with the teachers involved in the research; b) to achieve descriptive analyses of the selected learning techniques in order to determine their hierarchy based on their impact on the online didactic activities for each of the two school levels with a view to provide an objective analysis of the ways students' online interaction could be improved.

The participants

Based on focus groups discussions we realised a questionnaire which was applied to a sample of 100 teachers (50 for each school level: primary school and gymnasium) from Vrancea County, Romania. The teachers from lower secondary school teach social and humanistic disciplines as these interactive techniques are more frequently used with these objects of study. The teachers from both school

levels were selected from among experienced teachers with 5 to 30 years of experience in the educational system.

The instrument

The instrument of research was a questionnaire which analyses the opinions of the teachers in the primary and gymnasium levels regarding the impact of interactive methods on online didactic activities. The questionnaire was conceived based on the study of specific literature and on the discussions in focus-groups with the teachers from each of the two school levels. This allowed the identification of a series of interactive learning techniques which are frequently used in online didactic activities and have an efficient impact on students' learning through cooperation: brainstorming, think-pair-share, starbursting, lotus blossom technique, concept mapping, the clustering technique, the four quadrants, the quintet, pick the winner.

The respondents chose variants of a five-step scale: (1) to a very low extent, (2) to a low extent, (3) to an average extent, (4) to a large extent, (5) to a very large extent. Teachers' choices showed each item's relevance for the impact of interactive methods on online didactic activities.

Results and discussion

The SPSS software was used for the descriptive analyses, the t-test for the independent samples.

Table 1 Means and standard deviation of the impact of interactive methods on online didactic activities

Items of the impact of interactive methods on online didactic activities	Primary school Mean (std. dev.)	Gymnasium Mean (std. dev.)
Brainstorming	4.82 (0.418)	4.78 (0.438)
Think-Pair-Share	3.94 (0.935)	3.16 (0.842)
Starbursting	4.76 (0.667)	3.36 (1.191)
Lotus blossom technique	2.08 (0.724)	3.78 (0.848)
Concept mapping	3.10 (1.931)	4.00 (0.833)
Clustering technique	4.68 (0.522)	4.18 (0.776)
The four quadrants	3.92 (0.900)	4.64 (0.563)
Quintet	4.54 (0.646)	4.20 (0.682)
Pick the winner	3.42 (1.311)	3.00 (0.833)

Source: Authors

With the means in Table 1 we established a hierarchy of the indicators for the impact of interactive techniques on online didactic activities for primary school and lower secondary school. As such, the indicator ranking 1st was

perceived as having the greatest impact on online didactic activities, whereas the item in the 9th rank was viewed with the lowest impact for the same purpose.

Table 2 Descriptive of hierarchy of the impact of interactive methods on online didactic activities

Rank	Primary School	Gymnasium
1.	Brainstorming	Brainstorming
2.	Starbusting	The four quadrants
3.	Clustering technique	Quintet
4.	Quintet	Clustering technique
5.	Think-Pair-Share	Concept mapping
6.	The four quadrants	Lotus blossom technique
7.	Pick the winner	Starbusting
8.	Concept mapping	Think-Pair-Share
9.	Lotus blossom technique	Pick the winner

Source: Authors

According to Table 2, the 1st rank in the hierarchy of the impact of interactive techniques on students' online learning is for brainstorming with both levels of education ($m = 4.82$ in primary school and $m = 4.78$ in lower secondary school). This can be argued by the fact that brainstorming is an interactive method with a wide applicability and a major impact on students' cognitive and socio-affective development and, as such, on their involvement in the online didactic activities. Based on the fact that all ideas are accepted without criticism, students feel free to get creative and involve actively in school assignments. The items ranking the 2nd and the 3rd with primary school are starbusting ($m = 4.76$) and clustering technique ($m = 4.68$). As they are variants of brainstorming and techniques of graphic organization, starbusting and clustering are attractive for young students because they provide means of organizing knowledge, using images and colours, in order to establish connections among ideas, concepts etc.

With lower secondary school, the items ranking the 2nd and the 3rd are the four quadrants ($m = 4.64$) and the quintet ($m = 4.20$). These two are techniques by means of which the information is efficiently synthesized, which allows better understanding and as such, effortlessly learning of the information, that is why they are more frequently used in the online didactic activity.

The quintet is among the first five top rankings with both school levels ($m = 4.54$ for primary school and $m = 4.20$ for lower secondary school). Students prefer this technique as they are allowed to express creatively their ideas, knowledge or emotions. As online assignment, the quintet proved more efficient when done in pairs. The work in large groups led to debates which proved time consuming.

Think-Pair-Share ranks differently with each school level: 5th rank with primary school ($m = 3.94$) and 8th rank with lower secondary school ($m = 3.16$). The excitement of sharing and supporting knowledge, impressions or personal

experiences makes it a popular technique with primary students. However, as students grow old, they become more restrained and the technique becomes efficient if several factors are taken into account: choice of partner for pair work, selection of theme or topic of discussion etc.

Concept mapping also ranks differently with each school level: 8th rank with primary school ($m = 3.10$) and 5th rank with lower secondary school ($m = 4.00$). As primary school students are too young, they find it difficult to organize and represent synthetically knowledge by themselves. Most of the times, they resort to their teacher's help for such tasks. On the other hand, gymnasium students have the ability to represent concepts and ideas and the relationships among them quite easily, that is why the technique is successful as online didactic assignment with this segment of age.

The lowest means in the hierarchy is for the lotus blossoming technique ($m = 2.08$) in primary school. The lotus technique is more intricate to realize, that is why teachers prefer to use it in whole-class activities and less as learning task in independent group assignments. With the lower secondary school, the lowest rank is for pick the winner technique ($m=3.00$). Teachers mentioned that, most of the times, in the stage of choosing the winning solution conflicts between the groups often occur. That is why students usually prefer using this technique under teacher's supervision.

The T test for the independent groups was used to determine the differences of the opinions regarding the impact of interactive methods on online didactic activities. The significance level was set to 0.05. Starting from the significant differences from a statistical point of view among teachers' appreciations, we could state the relevance of the impact of interactive methods on online didactic activities in the two school levels. Thus, our analysis of the appreciations of the teachers from primary school and gymnasium emphasized significant differences for 8 items (the four quadrants, the clustering technique, the quintet, the lotus blossom technique, starbursting, concept mapping, think-pair-share, pick the winner, $p<0.05$). We registered statistically insignificant differences for one item (brainstorming), indicating the convergence of opinions of the teachers from the two school levels.

Conclusions

Maintaining students' learning interaction online is important as it creates positive relationships among peers. These are not beneficial only to students, but to teachers also. Research has shown that teachers who have good relationships with students are less stressed and are more likely to have high-achieving classrooms. Classroom climate will change as a result of teacher-student relationship. As students feel more connected to their teacher, they will also begin to feel the same towards their peers. This will lead to a classroom environment

where students feel safe and supported to engage in group work and to take risks in learning (Krantz & Smith, 2021).

Our study, through the hierarchies made, provides a possible way of selecting and using a certain range of interactive methods by teachers in primary and lower secondary education interested in improving teaching. By relating the methods to the multireferential impact they can have on the teaching activity (as a form of support for cooperative learning, intercommunication among students, efficiency of school activities), we provided a starting point/ documented material through the applied research on a selection of interactive methods and their effective application. On the other hand, the study can be further developed by applying the same research tool to a much larger sample, which can lead to much better contextualized results for different levels of education.

References

- Bocoș, M.-D. (2013). *Instruirea interactivă: repere axiologice și metodologice*. Iași: Polirom.
- Botnariuc, P., & Cucuș, C. (ed.). (2020). *Școala online. Elemente pentru inovarea educației. Raport de cercetare evaluativă*. București: Editura Universității din București.
- Dulamă, M.E. (2008). *Metodologii didactice activizante*. Cluj-Napoca: Clusium.
- Holcomb, E.L. (2001). *Asking the Right Questions: Techniques for Collaboration and School Change*. Thousand Oaks: Corwin Press.
- Knapen, R. (2018). *20 Interactive Teaching Activities for the Interactive Classroom*. Retrieved from <https://www.bookwidgets.com/blog/2018/06/20-interactive-teaching-activities-for-in-the-interactive-classroom>
- Krantz, C. M., & Smith, L. G. (2021). *Beyond Think-Pair-Share: A Quick Guide to Effective Collaboration*. New York: Routledge.
- Moise, C., & Seghedin, E. (2008). Metodele de învățământ. In Cucuș, C. (Ed.) *Psihopedagogie pentru examenele de definitivare și grade didactice* (305-353). Iași: Polirom.
- Oprea, C.L. (2003). *Pedagogie. Alternative metodologice interactive*. București: Editura Universității din București.
- Oprea, C.L. (2006). *Strategii didactice interactive*. Editura Didactică și Pedagogică, București.
- Steele, J.L., Meredith, K.S., & Temple, C., (1998). *Lectura și scrierea pentru dezvoltarea gândirii critice*, I. București: Educația 2000+.
- Taras, V., & Gonzalez-Perez, M. (2015). *The Palgrave Handbook of Experiential Learning in International Business*. Hampshire: Palgrave MacMillan.