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Teaching complex, abstract concepts through embodied learning: a drama-based approach

Dr. Simos Papadopoulos and Evi Mamali

Abstract

The aim of this research is to demonstrate the benefits of teaching complex, abstract concepts through a drama-based approach. We explore the way in which, as well as the extent to which several drama techniques may enhance the comprehension of complex, abstract concepts. This pilot study was carried out with fourteen pupils aged 11 to 12 years old at a Primary School in Attica, Greece. The participants were taught the concepts of 'Pattern' and 'Interdependence' in a playful and expressive manner, into an experiential, mostly kinaesthetic, context. The research was conducted in three phases according to the action research model, integrating elements of grounded theory. The evaluation of the effects was based on content analysis in the pupils' definitions of the concepts. The results show that embodiment through drama enhanced the pupils' ability to grasp the aforementioned concepts since their final definitions were more insightful, thus communicating a more thorough understanding.

Keywords:

Theatre Pedagogy, Inquiry Drama, embodied learning, kinaesthetic intelligence, abstract concepts, comprehension

1. Theoretical framework

1.1. Drama: an embodied way of learning

Drama cultivates pupils' thought by activating it within the dramatic environment. It is where all past experiences are re-examined based on new data and reconstructed anew. Thus, a different creative understanding emerges and enables schoolchildren to approach new knowledge through activities embodied in the imaginary frame of drama, while they simultaneously comprehend many aspects of life by reflecting within the dramatic framework (Akyol 2018). Pupils, acquire skills that are adopted in real life as well, therefore creating and testing hypothetical scenarios (Henry 2010). One part of these skills is critical thinking, which, not only is widely included in drama (Bailin 2006), but it is also expressed with specific ways such as abstract thinking (Dima & Tsiaras 2020). Moreover, it is the multimodality of drama techniques that sharpens and variates the pupil's focusing when this is adopted in teaching (Ragnarsdottir & Porkelsdottir 2012). Drama seems to be a key method that engages pupils in a high degree and creates positive emotions (Cawthon et al. 2011). This makes it a reliable choice in the case of teaching more difficult subjects or elusive concepts.

Especially in the case of Language teaching, the effect of drama is totally beneficial (Bonala 2016). Improvisations and Role playing enhance pupils' vocabulary and verbal expression (Farmer & Hurtado 2011). During a drama workshop the linguistic expression is activated in various ways by exploiting symbolisms, different styles, emotions and analyses. Hence, language apart from its communicative and expressive role, functions as a means of transmitting information (Papadopoulos 2010). Drama has positive effects on the perception of texts (Bidwell 1990; Skulmowski & Rey 2018), as well as comprehension as a wider skill, that appears when-through its techniques-previous forms of comprehension are tried and revised thus leading to a new, fuller and more complete comprehension (Moore 2004), since the material of imagination is externalized and visualized in such a way that leads to transformation and a new understanding of the old (Courtney 1990). Improvisations and Role playing create an environment of mutual understanding because of increased interaction, which offers more opportunities for speaking and hearing (Gonzales 2014). On the other hand, the children's participation in theatre workshops cultivates their writing skills (Papadopoulos 2007) and contributes to the better comprehension of logical models, the relation between cause and effect as well as the interpretation of the framework and the concepts (Kalidas 2014).

The connection between kinaesthetic intelligence and drama is particularly interesting. The reinforcement of typical teaching with activities of kinaesthetic character has a positive effect on pupils (Gonzales 2014). By taking into account the fact that there is a very high relevance between physicality and thought (Pourkos 2008), we come to the conclusion that when a teacher encourages physical expression, then s/he is orientated towards a more brain-friendly (Baldwin 2004) holistic pedagogy. Moving within an orientated interaction-as it is the case of the dramatic environment-activates the senses more intensely, thus reinforcing memory (Sutton 2014). It is also characteristic that in role playing many factors of approaching

knowledge are simultaneously activated. Spatial intelligence, motion and emotions, a combination that particularly encourages the development of thinking and language (Zafeiriadou 2009) are included here. The addition of the kinaesthetic condition, maximizes not only the cognitive benefits, but also the pupils' engagement (Rothwell 2011), since knowledge is perceived as a playful activity.

1.2. Understanding abstract concepts in a dramatic context

Abstract concepts are particularly difficult as they do not correspond to something specific. Their form may be recognized and clearly conceived by the senses. As a result, the way with which we process and represent them, has created a great deal of scientific dialogue (Borghi et al. 2017). The role of various types of information of linguistic, emotional and orientated character (Bolognesi & Steen 2018) has been examined, while there are some who claim that those may be understood when they are metaphorically connected with fields of the experience, addressed to something specific (Dijkstra et al. 2014). However, during the last few years some claim that the command of abstract concepts is more complete when it derives from the combination of all the individual approaches, since their comprehension is related not only to the linguistic, but also to the perceptual world, thus combining linguistic representation and embodiment (Louwerse 2018).

Correspondingly, difficulties arise in the teaching of abstract concepts. Pupils find it difficult to find some direct analogy confirmed by their senses in the surrounding environment (Schwanenflugel 2015). If we take into account the fact that our brain acquires new awareness not only with the incoming of new data but also with its exposition to new sensory experiences (Duffy 2015), it is then obvious that the comprehension of abstract concepts cannot be accomplished through traditional teaching, during which explanation is realised exclusively with the aid of the method of lecturing.

A series of research applications confirm the above claim. These researches study the comprehension of abstract concepts far from the limitation posed by the purely verbal way, by approaching it via drama and the experience this presupposes. More specifically, there has been research on the exploitation of drama as learning environment for the comprehension of complex, abstract concepts in Science (Whitworth et al. 1999; Coletta et al. 2019), Mathematics (Erdoğan, S. & Baran, G. 2009), Social Sciences teaching (Barnes et al. 2010), as well as in connection with digital technologies. (Hashagen et al. 2009). The results of these researches indicate that the dramatic environment offers the possibility to understand abstract concepts through the senses, whereas the movement across space and the physical depiction of the concepts function as the bridge of connection between the 'abstract' and the 'realistic'. In Science, pupils acquired an intuitive perception of abstract concepts with the aid of motion and representation in space (Braund 2015), thus transforming their body into a tool for approaching the new knowledge, separating the real from the equivalent imaginary (Varelas et al. 2010). In Mathematics, researches showed that pupils connected the concepts with their practical dimension in everyday life (Masoum et al. 2013), while they exploited gestures to a high degree as a means of comprehending them (Alibali & Nathan 2012).

All the above suggest that the understanding of abstract concepts by the children is more effective when they are engaged in embodied learning processes as offered by the dramatic environment. We have embodiment when the body mediates in the enactment of the concepts through the action developed in space (Branscombe 2019). Comprehension emerges embodied in the dramatic framework when the concepts are expressed through physical expression. The adoption of kinaesiological codes lined with a special meaning, the deliberate use of space and the gesture repertoire, confirm the relation between abstract thinking and a properly constructed perception of space (Lengel & Kuczala 2010). Embodiment is a means of comprehension in the imaginary space of drama, aided by elements such as gestures. These are either beat gestures, deictic, iconic or metaphoric ones that give birth to concepts (Edwards 2010). Therefore, the embodied approach functions as a learning environment for abstract concepts, thus contributing to their semantic representation (Smyrnaïou et al. 2016).

2. Methodology

2.1. Research objectives

According to researches (Vigliocco et al. 2017), the comprehension of abstract concepts especially for children up to nine years old, is more effective when these are related with positive emotions. Furthermore, there are research findings and respective theories, which claim that the exploitation of the body has a positive effect on language comprehension (Kontra et al. 2012; Shapiro et al. 2018). Embodiment, in particular, contributes to the deeper comprehension of the abstract concepts as the body calls sensorimotor, cognitive and affective elements (Bailey 2021). It is the participation of the whole body in learning that enables it to be more effective, an opinion that is founded in organic factors: this is because during motion and action the body releases brain proteins and nerve-growth factors (Chandler et al. 2015) that reinforce the development of the neurons. Therefore, this is how the aim of the present research was shaped: to discover if the application of an intervention in 11-12 year-old pupils based on drama techniques of creative and inquiring character promotes the comprehension of complex abstract concepts.

Thus, a pilot study for school age pupils was designed, with an intervention based on embodied learning. Drama techniques were adopted for this purpose and especially the comprehension of complex abstract concepts of 'Pattern' and 'Interdependence'.

2.2. Research method

According to John O'Toole, one way of combining dramatic art and research is to embody it in the frame of a research, within which it may be substantiated (O'Toole 2006). The present research exploits dramatic art within an educational frame. Therefore, dramatic art is adopted as a tool for improving the educational process. Structurally, it is action research. It was designed based on the model suggested by Kemmis & McTaggart, according to which the research develops as a spiral of action, control, evaluation and re-designing (Cohen et al. 2008 – see the 8th edition (2017).

Initiated by the research question, a series of interventions based on inquiry drama techniques (Papadopoulos 2010) was designed. After the recording of the observations in the researcher's diary and the evaluation of the text material, a new re-designing (which was repeated thrice) was realised, each time with more details (Katsarou 2016). However, in order to draw more detailed data from the text material, categories of analysis were formed by exploiting the qualitative content analysis. The possibility to add categories that derived from the researched material allows a greater degree of flexibility (Flick 2017). Therefore, we chose a mixed research approach, since some aims of grounded theory were included (Flick 2017) in order to shape a new theory –via the action field- concerning the way children comprehend in depth complex abstract concepts.

2.3. Sample

The subjects of the pilot study were 14 pupils of the 6th grade of Greek Primary Public School, in a suburban area. There were 10 boys and 4 girls. The teacher of the class was the one of the two researchers of the present study. The research was carried out during the third trimester of the school year, which means that we had already worked with the pupils for six months. This was a motley group of pupils, concerning their skills and interests. They also differed in behavior, character and the response to the content of the teaching and its multifarious approaches. Moreover, it was noted that the specific group did not have any previous experience and familiarity with the experiential teaching approach or the drama techniques. Theatre was a very special subject for them, which they were taught partially experientially until the 4th Grade, never, however in connection with some other subject.

2.4. Data collection

The collection of the research data was realised in two ways. After each workshop, the researcher used to collect the texts with the definitions about the specific researched concept that each pupil wrote. Apart from these texts, there was a research diary kept, in which the researcher noted down some observations concerning the degree of the pupils' response to the various theatre techniques as well as the way with which they worked during their application. A lot of information was drawn from this diary, concerning similar aims of the research, as to what was more difficult for the pupils, in which stage of the workshop, which technique enabled them to comprehend the researched concept, which factors caused greater engagement of the pupils and consecutively – offered greater learning benefit. In order to organize the study of the material and the meaning of the qualitative data, there was content analysis in the pupils' text material, with a subsequent establishment of analysis categories compatible with the aims of the research.

2.5. Pilot study presentation

The subjects of the research participated in three 2-hour workshops, once a fortnight. The basic aim of each workshop was the degree of comprehension of the abstract concept on which each team worked. However, each time the techniques with which every concept was approached, were different. These were selected according to which was considered more appropriate. Also, all the observations and notes after each workshop were taken into account.

The three 2-hour workshops were formed in the following way:

<p>1st Workshop <i>Interdependence (a)</i></p>	<ul style="list-style-type: none"> ✓ Kinetic improvisations ✓ Inquiry on the subject 'inter-' and '-dependence': <ul style="list-style-type: none"> A) The game 'The sculptor and the Model' b) Silent improvisations in pairs (The spectators guess who depends on whom) ✓ Physical depiction of the concept of 'interdependence': One by one, the pupils form an imaginary engine with movements and sounds. ✓ Improvisations with role cards: Six completely different people are found in a remote village, in an emergency situation. They must cooperate in order to survive <ul style="list-style-type: none"> A) Three freeze frames B) Thought tracking C) Reflection on the question: 'if the person whom I depend on did not exist, what wouldn't I be able to have or do'.
<p>2nd Workshop <i>The Pattern</i></p>	<ul style="list-style-type: none"> ✓ The Leader of the tribe. One by one everybody becomes the leader of the tribe. The leader expresses him/herself with a rhythmic and linguistic pattern, which the group reproduces in concert. <ul style="list-style-type: none"> ✓ The group in a circle. One at a time, the first person starts to 'scratch' the left arm of the person next to him/her in a consistent pattern. Then they all repeat this in concert. ✓ The Composer and the Orchestra' The Animator presents 4 cards (A=handclap, B=stamping the foot on the floor, C=standing jump, D=standing turn). Each time the composer improvises his/her own rhythmic pattern based on a combination of the cards. The group (Orchestra) performs it while standing in a chorus line (each member of the orchestra performs a certain part of the pattern until the line comes to an end. ✓ With the aid of three pupils, an initial geometric structure is formed in the space. The group is asked to develop this geometric pattern in a logical sequence <ul style="list-style-type: none"> ✓ a) Presentation of our daily life patterns with consecutive freeze frames b) Creation of an ordinary pattern of my reactions when a problem emerges, with consecutive freeze frames ✓ Creation of four advertisements - each one must contain a hidden pattern
<p>3rd Workshop <i>Interdependence (b)</i></p>	<ul style="list-style-type: none"> ✓ Scenario A (subgroup A): (with predetermined, positive end) <i>Freeze frame</i>: Two persons pose happy in front of a photographer's camera. People around applaud→ The group conceives the story. What has happened? They instantaneously come to life→ The photographer asks them to make a statement for their success→ The photographer becomes a journalist. He takes an interview from both.

	<ul style="list-style-type: none"> ✓ Scenario B (subgroup B): (with a given general condition). The hero travels from condition (a) to condition (b) for a certain purpose. In due course, a very serious problem arises. They make a choice out of a list of cases and dramatize the effort with an improvisation, by choosing a person that they invent in order to come to the desired solution. <i>Thought tracking</i>: critical approaches emerge, as well as emotions and moral dilemmas concerning interdependence. ✓ Scenario C (subgroup C): Hypothesis: you live in the Future and you are called to give a solution to a live threatening problem. People (a) see things with way (a). People (b) see things with way (b). something is missing from people (a) and People (b) have something that is essential to people (a). -The Hot Seat: the revelation of the conflicts. A new fact in the story: the situation deteriorated, therefore (a) and (b) people should decide what to do in cooperation, otherwise they are in danger of perishing. -<i>Improvisation</i> (They show how a solution was given through interdependence). ✓ Scenario D (Subgroup D): Personification and Analogy. Inquiry on the concept of Interdependence with improvised dialogues of objects that go together (eg. A sock and a foot, a wallet and money, a racket and a ball).
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3. Results

In order to draw the results, the following categories of text material analysis were defined:

- i) *A related concept*: The pupil gives the meaning of the concept with synonyms and other similar expressions.
- ii) *Distinction*: S/he defines the concept as a kind of verbal negation or in juxtaposition with something else (what this concept IS NOT).
- iii) *Enhancement*: S/he explains the concept, gives further definitions, justifies it.
- iv) *Example*: S/he gives an example to reinforce the definition.
- v) *Evaluation*: S/he gives a definition of emotional type or evaluates the concept.
- vi) *A figure of speech*: S/he uses a figure of speech or an idiomatic expression (simile, analogy, metaphor).
- vii) *Misconception*: The pupil gives a definition that shows the misunderstanding of the concept or mentions a misguided application of the concept.

The last category had a negative meaning concerning the aim of the perception of the concept and it was necessary to embody it to the analysis in order to evaluate the size not only of the non-comprehension of the concept but also its misconception.

In order to analyse the results of the research intervention, the analysis categories were clustered in two wider categories:

a) The basic category of the 'Definition of the Concept', in which the analysis categories of the basic definition belong with the aid of some synonym word, phrase or similar concept, its distinction of 'what it IS NOT' and the reference of the wrong definition (analysis categories i, ii and vii).

And

b) The category of the 'Enhancement of the Concept', in which the analysis categories of the reference of an example, the additional reference to a figure of speech or of an idiomatic expression in order to reinforce the definition, the explanation and justification, as well as the emotional type of clarification and evaluative assessment of the defined concept belong (analysis categories iii, iv, v and vi).

Based on those two wider categories, the results of the three workshops were recorded as follows:

3.1. First Workshop: *Interdependence (a)*

Definition of the concept

i) *A related concept*: Nine out of the 14 pupils gave a basic definition of the concept. It was obvious from their definitions that they had understood the role of the first part of the word (inter) in the meaning of the concept and they had given it in the phrasing of the definition, with the sentence 'we depend on each other' being the dominant one.

ii) *Distinction*: One pupil gave a basic definition of the concept by excluding 'what it IS NOT interdependence'

vii) *Misconception*: Four pupils showed that they did not fully understand the meaning of 'interdependence'. Two of them understood the concept unilaterally by identifying it with that of 'dependence', whereas the other two -apart from that- approached it through the angle of trust. Those particular pupils defined interdependence as a means of dependence related with the trust between two people (e.g., '*interdependence is when one person depends on another, when, for example, trusts that s/he will not betray his/her secret*').

Enhancement of the concept

iii) *Enhancement*: 11 out of 14 pupils clarified or justified their definition. More specifically, four out of 11 pupils attempted some kind of justification of their definition, whereas seven clarified their definitions by giving further explanations in order to reinforce the clarification they pursued.

iv) *Example*: 11 pupils mentioned an example in their definition in order to reinforce their opinion.

v) *Evaluation*: Five out of 14 pupils expressed an emotional definition about the concept they wished to define or uttered some evaluative assessment.

vi) *A figure of speech*: Two pupils interpreted the concept in their definition with an idiomatic expression or a figure of speech.

3.2 Second Workshop: *Pattern*

Definition of the concept

- i) *A related concept*: 10 out of 14 pupils gave a basic definition of the concept of the 'pattern'.
- ii) *Distinction*: 11 pupils gave a definition of the concept by excluding 'WHAT IS NOT A PATTERN'. Here, it must be pointed out that only one pupil out of these 11, used this type of definition as basic, while the other 10 adopted it as an addition of the already existing basic definition they had given.
- vii) *Misconception*: Three out of the 14 pupils that participated in the 2nd Workshop gave definitions that led to a misconception or wrong perception of the 'Pattern' concept.

Enhancement of the concept

- iii) *Enhancement*: 11 out of 14 pupils clarified or justified of the definition they gave. More specifically, three out of 11 pupils attempted some kind of justification of their definition, while the other 8 gave additional clarifications for their definition.
- iv) *Example*: 12 pupils gave an example for their definition in order to reinforce their opinion (an example appeared in the wrong definitions as well).
- v) *Evaluation*: none of the pupils expressed an emotional comment for their definition of 'what is a Pattern'.
- vi) *A figure of speech*: only one pupil interpreted the 'Pattern' concept, especially to the reinforcement of his/her basic definition.

3.3 Third Workshop: *Interdependence (b)*

Definition of the concept

- i) *A related concept*: 13 out of 14 pupils gave a basic definition of the concept 'Interdependence'
- ii) *Distinction*: Two pupils gave a definition of the concept by excluding 'what is not interdependence'. Here, it must be mentioned that both pupils used this type of definition as further reinforcement of their basic definition.
- vii) *Misconception*: One pupil gave a definition that led to partial understanding of the concept and more specifically to a unilateral perception of it.

Enhancement of the concept

- iii) *Enhancement*: 13 out of 14 pupils clarified or justified the definition they gave. It was characteristic that only four of them used the word 'namely' in an effort to explain better the definition they gave. The majority of the definitions in this category included clarifications, further explanations to justify the previous sayings, as a means of argumentative support and that was why casual conjunctions appeared quite often.
- iv) *Example*: 12 pupils used an example in their definitions in order to reinforce their sayings.
- v) *Evaluation*: Seven pupils expressed an emotional comment or an evaluative assessment for their definition about what is 'Interdependence'. Three pupils, however, expressed themselves more than once and that led to a total of 10 such comments.
- vi) *A figure of speech*: Three pupils interpreted the concept of 'Interdependence' with a figure of speech-in particular- to the reinforcement of their basic definition.

3.4 Analytical presentation of the ‘Enhancement’ subcategory

Regarding category three, Reinforcement, while in the second workshop the pupils recorded basic written definitions, in the third workshop their additions took on greater significance by an increased use of causal connections to the concept. We regard it as significant that, while the number of pupils that gave some kind of explanation was almost the same in both the first and third workshops, there was a developing tendency to make fewer suggestions for improving the phrasing of the given definition while placing more emphasis on causal support for the definition. This tendency for the justification of the basic definition of the concept in the last workshop, showed greater certainty concerning the comprehension, as well as the ability to support the meaning of the concept through further reasons that were employed for the justification of the choice of the definition in question. If, therefore, in the first workshop the pupils’ participation was more an attempt to improve the clarification of the definition, in the third workshop their participation consisted of an extension and conceptual reinforcement of the definition, with ideas that supported them.

For example, in the first workshop one pupil defined ‘Interdependence’ as follows:

‘For me, Interdependence means to depend on the other, like for example to lean on someone so as not to fall and the other person does the same. It means that you cannot do without the other person, you need him/her, they complement each other’ (an explanatory sentence).

In the third workshop, based on the recordings of the researcher’s diary, it was noted that the pupils did not only refer to examples that were easier and more accessible to thought, but they were also driven towards a more reflective direction with the aim to highlight the extension of the abstract concept, as well as other similar concepts that were included in the same conceptual field and justified their definitions. Therefore, in the third workshop a very characteristic answer was the following:

‘Interdependence is something that includes two persons and more. In all tribes and societies, in all the countries of the world one depends on another. This is why no one can survive and live on his/her own. Even among people who are completely different, there may be some kind of interdependence at some difficult time...they will interdepend because they will have to survive and they will not have any other choice’.

As far as the fourth analysis category is concerned, the pupils’ participations in adopting examples so as to reinforce their definitions, were of an almost equal number, from the first up to the third workshop. It was important, however, to notice a slight qualitative shift in the content of the examples, i.e., in the first as well as the second workshop the examples given were either weak or very close to the stimulus in which the pupils were exposed during the experiential approach (e.g., ‘For me, Interdependence is when someone depends on another person and vice versa... one example is when a friend needs you but at the same time you need him/her’ (a trivial example drawn from the workshop acts). In the third workshop, the examples were

expressed with greater clarity and, at times, they thematically got away from the material given experientially. (An indicative answer is the following:

'People, are also interdependent with their jobs, e.g., the cook depends on connoisseurs for the money and the connoisseurs depend on the cook for the food' (he/she elaborated with his/her original example).

In the fifth analysis category the recordings led to the conclusion that there was fertile contribution of the kinaesthetic and experiential addition. Even if there were references of an emotional type in the first workshop, in the second one there was none, while in the third workshop a small increase in the number of the recordings in comparison with the first workshop was observed. The aim during the design of the third workshop was to have as many references of such type as possible. Here, however, the main observation was that the pupils' comments of emotional and evaluative character differentiated qualitatively. While for example there were five such comments of brief and general character (for example, *'Interdependence is something beneficial'*, *'Interdependence is something good among people'*), in the third workshop they were slightly increased and took the form of a more conceptually advanced and more coherent as far as phrasing was concerned (for example,

'Eventually, our differences unite us more than separate us'.
'Eventually, Interdependence may be everywhere and helps us to confront the difficult times of our lives. I feel that it helps us to create a more beautiful world with numerous benefits'.

Finally, as far as the sixth analysis category is concerned, there were very few findings. The number of the pupils that used a figure of speech to reinforce the abstract concepts defined, was at the same level in all three workshops (2, 1 and 3 pupils respectively for each workshop).

3.5 General Evaluation

In general, all the pupils were eagerly engaged in the playful dimension of the activities. They did not approach the researched concept on a first basic level exhaustively and omitted to pinpoint its positive as well as negative parameters. The comprehension of the concept focused especially on the visualized dimension of the 'composition of the powers'. Some pupils, however, were not able to comprehend the role of the prefix in the meaning of the word and identified it with the word *'dependence'*. Gradually, it was noted that with the addition of physicality, the pupils drew more information from their experience and they managed to approach the researched concept with terms that were on loan or inspired by the kinaesiological code they used while playing as a group in the space. They thus ascribed to the concept of the 'Pattern' qualities such as repeatability, steady frequency, the fact that the individual parts that formed a 'whole', the regularity as well as the gradual addition of elements that made it able to evolve. In the middle phase of our research, however, very few pupils were able to transfer this knowledge into a more abstract level in order to reach some kind of generalization.

By exploiting all the above observations in the third and final phase, the focus of the intervention shifted from the playful physicality of the researched concept and the plurality of the comprehension of a scenario at the beginning of multiple scenarios, to the multiple alternative 'interpretations' of the data, the variation of the style and the graduation of the intensity. This change of focus brought about the improvement of the content of the definitions and therefore the level of comprehension of the researched concept. At the end of the third workshop, the pupils delivered enhanced definitions and included not only the basic definition of the concept, but also some additional defining phrases with emotions and judgements, thus presenting their deeper realization of the concept and its use in miscellaneous frames.

Discussion

Based on the evidence drawn from the workshops, the comprehension of complex abstract concepts may be substantially reinforced by the embodied addition of a theatre-pedagogical intervention. A general observation is that not only does it become more complete, but it has also less possibilities to be unsuccessful. In the experimental environment of the theatre-pedagogical workshop, the pupils are able to perceive such concepts by working on the skill of distinction. They negotiate the meaning of the concepts, so that they gradually differentiate them from other similar ones, which they might easily confuse.

An additional conclusion is related to the qualitative upgrade of the definitions: when the activities include some kind of a role in the playful frame of an issue, the pupils are engaged with greater eagerness and efficiency in the attempt to justify and express arguments (Papadopoulos 2006). As it emerged from the recordings, when the comprehension procedure was mediated by a role, the development of the argumentation and justification of their views concerning the concept, was more eager and productive. This is confirmed by other researches as well (Richards 2019). Additionally, the imaginary exploitation of space and their bodies through kinaesthetic activities, boosted the invention of scenarios considerably (Dorion 2009; Chudler et al. 2006; Precious et al. 2014). Consecutively, this contributed to the reinforcement of the comprehension of the abstract concepts through the use of examples. Also, we must highlight the frequency of the presence of emotional and evaluative remarks about the researched concepts: the emotional engagement of a pupil who participates in a drama workshop, leads him/her not only to the deeper comprehension of the concept, but also to the eagerness to 'shift' as far as the way that s/he initially perceives things is concerned (Heyward 2010). The role of the pupils' emotional engagement in connection with comprehension, is mentioned in other researches. This confirms that animation creates a fertile ground for a better acquisition of knowledge, concerning language (Arnold 1999; Lengel & Kuczala 2010; Piazzoli 2011).

Finally, by taking for granted the fact that pupils did not include figures of speech in their definitions before the experiential addition, we may be of the opinion that the presence of such figures in a posterior phase was a result of the effect of drama on the comprehension of the researched concepts. With some reservations, we attribute

this quotation of figures of speech to the ability that physicality offers to dramatization in order to give shape to the abstract concepts, to create images that represent these concepts and to therefore concretize and shape whatever abstract.

In general, we might ascribe the shift to a more detailed interpretation of the concepts, to the addition of the kinaesthetic factor, which enables the process of their approach and interpretation to be more vivid and expressive, thus promoting it to a holistic experience through mental, emotional and practical elements (Abed 2016). During the representation, physicality activates the senses, which function as directly accessible information, added to the already achieved mental process of the concepts (Anderson 2018). The concepts are visualized through their morphed depiction and they are therefore specified, thus transforming the abstract concept into something to be visualized. Subsequently, this sighting leads to the decoding of the concept and its generalized comprehension. It was observed that embodied intervention contributed to the in-depth comprehension of concepts, something which was in line with other researches (Sally 2019; Zdrzilova et al. 2019).

Given the limitation posed by the sample of the research, we consider that it would have been interesting to explore two further elements: first, this research might have continued not with the aim to comprehend a complex abstract concept but its satisfactory verbal interpretation. This aim emerged from the observation that while two pupils of the group seemed to comprehend the meaning of the concepts during the experiential process, it was not possible in the end to interpret it verbally with precision in their definitions. Because the frequency of the appearance of figures of speech was not considerable, it would eventually be interesting to delve into the effect of drama in their use as an example of reinforced comprehension of complex abstract concepts.

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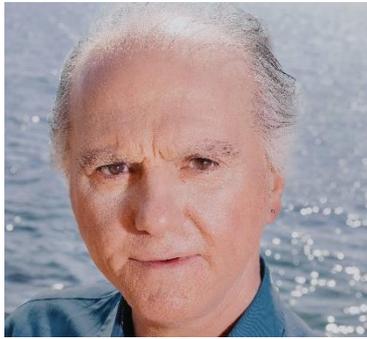
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