

## Dimension of Consumer Culture in Verbal Creativity expression of Pre-service Technology Teachers in the Baltic Countries: the Field of Electronics

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**Abstract:** The article investigates the expression of verbal creativity of the Baltic pre-service Technology teachers in their final years of study and analyzes the constituent dimension of consumer culture. The students' verbal creativity was examined by means of a verbal expression questionnaire which had been compiled following the methodological recommendations of E. P. Torrance for diagnosing a person's creativity. The development of consumer culture is part of Technological education curriculum analyzing the issues of responsible consumption which are becoming more and more complex. In most cases the result of education is directly dependent on the educator's knowledge, skills, values, habits, experience and sophistication. Creativity breeds creativity, hence, the expression of verbal creativity of pre-service Technology teachers is analyzed as a means to reveal the relation of pre-service teachers with the field of electronics in terms of consumption. The choice of pre-service Technology teachers was determined by the specificity of the subject. The knowledge and patterns gained in classes of home economics are applied practically, hence, the relation between Technology teachers' verbal creativity and consumer culture as well as its expression are becoming increasingly important in the context of preparing learners' for real life. Research shows that the total average grade for academic achievements of the Baltic pre-service Technology teachers in the final years of studies is higher than average (more than 80%) which makes it possible to assume that the informants' subject specific knowledge is higher than the basic level. The analysis of the qualitative research data shows that the informants, irrespective of their average study grade, possess all features of verbal creativity expression – creative fluency, flexibility and originality. Yet, the study did not reveal any tendentious correlation between the informants' verbal creativity expression scores and their study results. However, it was determined that every group included informants who clearly distinguished themselves by the highest and lowest verbal creativity scores. The research data analysis makes it possible to argue that people's individual life experience is significant for the expression of verbal creativity. The aforementioned achievements of the informants create favorable conditions for a successful organization of the education process since the educational interaction among the participants of the education process is initiated and maintained in the verbal form.

**Keywords:** verbal creativity, consumer culture, pre-service Technology teachers, home economics, electronics, higher education.

### Introduction

The main goal of general education skills – to educate a person and prepare him/her for life according to ability – enables education politicians to review educational programmes and critically assess their content on a regular basis; educators – to aim at self-improvement and creatively change teaching methodology by individualizing and differentiating tasks; parents – to responsibly grow their children and continuously learn themselves; learners – to aim at self-recognition and attentively follow the changing motivation for any activity; researchers – to train creative teachers meeting the requirements of the market, community and historical period (Schihalejev, 2013; Bradley, 2011; Urhahne, 2011; LR švietimo įstatymas, 2011; Dačiulytė, Juškeliene, 2010; Lind, Pappel, 2010; Hong, Horng, 2008; Scott, 2007; Europe 2020..., 2010; National Sustainable..., 2004).

Despite the changing political, economic, social environment, people's age, their social status and welfare, every person still steadily remains a consumer: from art to satisfaction of physical needs. The mentioned processes of change and human personality have an unquestionable influence on the consumer culture: on the consumption process, the creation of consumer culture, its development,

transmission and growth. The development of consumer culture (consumer education) is one of the priority spheres of the European Union consumer policy corresponding to the ideas of sustainable growth. Members of the knowledge, information, creative, consumer societies have to be able to act responsibly in social terms by following the principles of sustainable development, choosing daily and luxury goods and services, selecting information, conceiving advertising and its influence, considering ethical, economic, natural, ethnic and identity aspects (Dačiulytė, Juškeliene, 2010; Consumer Education, 2009; Promoting Consumer..., 2009; Europe 2020..., 2010; Lightfoot, Burchell, 2005; Jungtinių tautų..., 2005; Lafferty, 2004; National Sustainable..., 2004).

All of that determined the fact of integrating consumer culture development into the curricula of general education schools. The education system consists of programmes of formal and informal education at school. Nevertheless, researchers argue that the education process also includes “a secret educational programme” which teaches most of real-life skills, including consumer culture. This programme is implemented in the social life of schools: while determining and analyzing different needs, formulating goals of activity, making plans, joining experimental projects, forming work groups and participating in their activity, discovering oneself as a personality, by acting responsibly and creatively in other educational activities typical of school learners. The main creator, planner and organizer of the educational process is the teacher. Teachers create the conditions and situations for educating learners at school by implementing formal and informal education as well as leisure activities and “secret programmes” in a form that would be appealing to their students (Miller, Imrie, 2014; LR švietimo įstatymas, 2011; Haifeng, 2010; Arias, Scafieldi, 2009; Scott, 2007).

Due to the influence of political events, the education reforms initiated in the Baltic countries almost three decades ago determined the changes of the subject of home economics in terms of its title, goals, curriculum and organization. The recognition of a subject begins with its title – Technologies. This word, associating with the greatest ever 21<sup>st</sup> century technological progress, was added to the existing titles by Latvians and Estonians (in Latvia – *mājturība*, in Estonia - *kodundus*), where as Lithuanians rejected the previous titles (in Lithuania the subject was called *buities kultūra*) and chose only the word *Technologies*. The title of Technologies involves the significance of technologies in the modern world and follows the development tendencies of research and society. The multi-disciplinary understanding of the subject Technologies comprises both the material and human intellectual resources, scientific and empirical knowledge, practical activity, ways of work and its organization, and, thus, Technologies can be defined as innovative activity which creates and applies new knowledge and achievements of science as well as processes and products based on this knowledge and achievements that are to satisfy the needs of individuals and the society and essentially change the qualitative possibilities of the society and every individual's life (Ramauskaitė, Stankevičienė, 2005). In other words, development of consumer culture is becoming an integral part of Technological education.

Technological education is implemented by applying the method of projects which enables learners to get immediately involved in activity following the principles of responsible consumption. During project activity programmes of formal and “secret” education merge facilitating the organic attainment of the objectives of consumer culture development. A professional teacher of Technologies is aware of the methods motivating students for activity, understands the dynamics of different groups of pupils and is capable of supervising the whole process of education, simultaneously fostering the creativity of his/her learners. It has to be noted that lessons of home economics pay special attention to the expression of creativity and its development in relation to production activity which finishes with a visible result or any other result identifiable by other senses. The development of learners' creativity requires a creative teacher of Technologies – a personality looked up to by others (Statauskienė, 2003; Statauskienė 2005; Lind, Pappel, 2010; Žygaitienė, Česnavičienė, 2014). Home economics is the part of general education school curriculum which closely relates creativity with consumer culture. This, in turn, makes one focus on the teacher of Technologies aiming to reveal the interrelation of the aforementioned elements in the verbal expression of the educator. Any change begins with the teacher, his/her personality, knowledge, experience and skills.

**The research problem:** What dimension of consumer culture (in the field of electronics) can be determined in the expression of verbal creativity of pre-service teachers of Technologies in their final years of study in the Baltic countries?

**The research object:** the expression of consumer culture in the expression of verbal creativity of pre-service teachers of Technologies in their final years of study in the Baltic countries.

**The aim of the research** is to determine the dimension of consumer culture in the expression of verbal creativity (the field of electronics) of pre-service teachers of Technologies in their final years of study in the Baltic countries.

**The research questions:**

- What are the prerequisites for including the development of consumer culture in the curriculum of home economics?
- What is the expression of the informants' verbal creativity?
- What dimension of consumer culture is revealed in the expression of the informants' verbal creativity?

**The research methods:** scientific literature and document review; qualitative analysis.

## Methodology

*Methodology of diagnostic analysis of verbal creativity expression.* The questionnaire consisted of two parts: the verbal and non-verbal one. This paper presents the analysis of creativity expression on the basis of only part of the questionnaire – the **verbal** one (Figure 1). The creativity questionnaires were prepared on the basis of Torrance's (1995; 1987; 1974) recommendations, K. H. Kim's (2006) work and the Lithuanian General Education Programmes (Pradinio ir pagrindinio..., 2008) for grades 5 to 10. When completing the tasks in the **verbal part** of the questionnaire for identification of creativity expression, the informants were supposed to **provide their answers in the textual form**. The verbal part of the questionnaire consisted of four different tasks completing which the informants had to reveal the variety of objects / phenomena; describe objects / phenomena; foresee the possible use of the objects and the possible consequences of their application. Every task included four different possible topics: textile, nutrition, constructive materials and electronics. The thematic tasks of the verbal part were prepared keeping in mind the general programme of home economics (Pradinio ir pagrindinio..., 2008; Mācību priekšmetu..., 2015; Mājturība un tehnoloģijas..., 2006a; Mājturība un tehnoloģijas..., 2006b). On the basis of their disposition and wishes the informants were allowed to choose the topic from which they would like to complete tasks. In the process of completing all the four tasks the choice of the topic for the task was open.

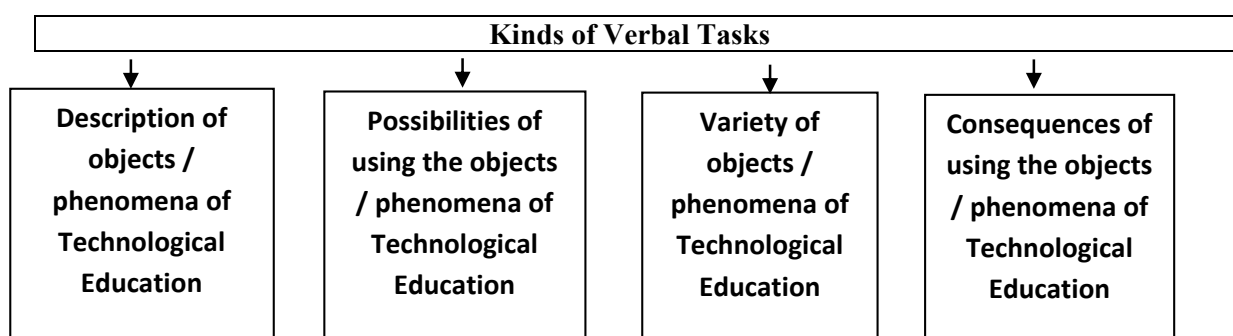


Figure 1. Kinds of Verbal Tasks in the Study on the Expression of Verbal Creativity.

Every task has to be completed in 3 minutes. The completion of the questionnaire on the identification of personal expression of verbal creativity in the textual form took 12 minutes (4 tasks x 3 minutes), not including the instruction and demographic questions.

The first feature of the expression of verbal creativity – **fluency** – is diagnosed by adding up the total sum of the informant's answers. The expression of creativity on the basis of fluency is measured by amplitude, quantity. The more the answers the higher level of creativity is achieved on the basis of the fluency criterion. In the calculation of the expression of creativity on the basis of points for the fluency criterion, every answer is assessed with 1 point.

Another feature of the expression of verbal creativity – **flexibility** – is perceived as the number of categories (classes). The expression of creativity on the basis of flexibility is measured by the variety of categories (classes) and their amplitude. All the answers of the respondents are grouped into categories (classes) according to their meaning. Irrespective of the number of answers in one category (class), when adding up the results, a category (class) is counted only once. The more variants of categories (classes) there are in the answers the higher level of verbal creativity expression on the basis of the flexibility criterion. Every category (class) is assessed with 3 points.

One of the features of verbal creativity, i.e. **originality**, is determined according to the number of unexpected, non-standard, unusual answers. An answer is considered to be original when it is unique, exclusive in the group of the informants. Every original answer is assessed with 5 points. Different groups provide different original variants of the answer.

*Methodology of identification analysis of the dimension of consumer culture.* The questionnaire on the expression of personal verbal creativity is completed in the textual form which makes it possible to analyze the content of their textual answers. The possibility to freely choose the topic of the task created favorable conditions to determine the informants' disposition to one or another sphere of home economics: textile, nutrition, constructive materials, and electronics. This paper focuses only the textual answers to the tasks on the topic of electronics. The informants' textual answers to every task were classified into categories and subcategories on the basis of their meaning. Dimension is conceived as a unit of measurement; thus the textual answers of the respondents were searched for the expression of consumer culture.

*The characteristics of the informants.* The sample of a qualitative research is purposive and typically convenient (Patton, 2015). The participants of the research were only the pre-service teachers of Technologies (home economics) in their final years of study from Estonia, Latvia and Lithuania. The nineteen informants who participated in the research were of different ages: from 21 to 41 (Table 1). The students in Estonia were older than those in Latvia and Lithuania. The students from Latvia had the highest average grades for their study achievements (8.99).

Table 1

#### Educational and Demographic Characteristics of the Qualitative Research Participants

No	Lithuania			Latvia			Estonia		
	Nationality	Average grade of the last term	Age	Nationality	Average grade of the last term	Age	Nationality	Average grade of the last term	Age
1	Russian	9,07	22	Latvian	8,9	22	Estonian	7,6	32
2	Polish	8,0	21	Latvian	8,4	22	Estonian	7,6	29
3	Lithuanian	7,0	22	Latvian	9,4	22	Estonian	8,4	22
4	Lithuanian	8,0	22	Latvian	9,3	21	Estonian	9,0	27
5	Polish	9,2	22	Latvian	9,0	21	Estonian	8,0	41
6				Latvian	9,0	22	Estonian	8,02	29
7				Russian	8,9	22	Estonian	9,0	29

The studies of Technology Education in the Baltic universities were chosen by people of Estonian, Latvian, Lithuanian, Russian and Polish nationalities (Table 1).

#### Results and discussion

*The verbal creative expression of Lithuanian pre-service Technology teachers in their final years of study.* The informant possessing the highest average grade (9.2) in the group of Lithuanian informants (informant No. 5) distinguished himself in the group only by exceptional verbal creative flexibility (75). Whereas the informant possessing the lowest average grade (7.0) for his studies (informant No. 3) distinguished himself in the group by the highest scores for verbal creative flexibility (45) and verbal creative originality (175) (Table 2).

Table 2

**The Scores for Verbal Creative Expression of Lithuanian Pre-service Technology Teachers  
in their Final Years of Study**

Informant	FLUENCY	FLEXIBILITY	ORIGINALITY	VERBAL CREATIVITY	Average grade
1	31	48	110	189	9.1
2	42	57	170	269	8.0
3	45	63	175	283	7.0
4	40	63	140	243	8.0
5	44	75	160	279	9.2
Average	40.4	61.2	151	252.6	8.25

The informant possessing one of the highest average grades (informant No. 1) distinguished himself in the group by the lowest scores for the expression of verbal creativity (verbal creative fluency – 31, verbal creative flexibility – 48, verbal creative originality - 110). Referring to the data of the qualitative analysis it is possible to argue that high results for achievements do not determine high scores for verbal creativity expression. Nonetheless, there was no tendentious correlation between the expression of verbal creativity and average study grades in the group of Lithuanian informants. However, it was observed that the informants in this group distinguished themselves by the highest (informant No. 3) and lowest (informant No. 1) scores for verbal creativity.

The analysis of the qualitative research data shows that the Lithuanian informants, irrespective of their average study grades, possess all the characteristics of the target verbal creativity expression – creativity fluency, flexibility and originality (Table 2).

*The verbal creative expression of Latvian pre-service Technology teachers in their final year of study.* The informant who distinguished himself by his academic achievements (average grade 9.4) in the group of Latvian informants (informant No. 2) did not reveal exceptional scores for verbal creativity. The informant possessing the lowest average study grade (8.4) (informant No 1) distinguished himself by the lowest scores for verbal creative originality (70) and general verbal creativity (163) in the group (Table 3).

Table 3

**The Scores for Verbal Creative Expression of Latvian Pre-service Technology Teachers  
in their Final Year of Study**

Informant	FLUENCY	FLEXIBILITY	ORIGINALITY	VERBAL CREATIVITY	Average grade
1	39	54	70	163	8.4
2	38	63	110	211	9.4
3	40	57	120	217	9.3
4	30	48	140	218	9.0
5	26	51	90	167	9.0
6	74	84	355	513	8.9
7	41	57	125	223	8.9
Average	41.14	59.14	144.29	244.57	8.99

The analysis of the qualitative research data revealed that there was determined no significant correlation between the academic achievements of the Latvian informants and their scores for verbal creativity expression. However, it can be argued that the Latvian pre-service Technology teachers in the final year of studies do possess all the target features of verbal and non-verbal creativity. It was also observed that this group includes the informant possessing clearly the highest scores for verbal creativity (Table 3).

*The verbal creative expression of Estonian pre-service Technology teachers in their final year of study.* The informants possessing the highest (9.0) (informants No. 4 and No. 7) and lowest (7.6) (informants No. 1 and No. 2) average grades for their academic achievements revealed diverse scores for their verbal creativity expression (Table 4).

Table 4

**The Scores for Verbal Creative Expression of Estonian Pre-service Technology Teachers  
in their Final Year of Study**

Informant	FLUENCY	FLEXIBILITY	ORIGINALITY	VERBAL CREATIVITY	Average grade
1	50	66	200	316	7.6
2	41	66	170	277	7.6
3	39	57	145	241	8.4
4	35	60	155	250	9.0
5	62	72	305	439	8.0
6	40	66	165	271	8.02
7	45	87	170	302	9.0
Average	44.57	67.71	187.14	299.42	8.23

On the basis of the research data it can be argued that in the Estonian group of the informants there was determined no significant correlation between the informants' academic achievements and their verbal creativity expression scores. Nevertheless, it is important to note the exceptional creativity and age of informant No. 5 in this group. The oldest informant (41 years old) (Table 1) possesses the highest verbal creative fluency in the group (62), verbal originality (305) and general verbal creativity (439) (Table 4). This group also includes an informant (informant No. 3) who clearly distinguished himself by the lowest score for verbal creativity expression.

The qualitative research data make it possible to argue that a person's individual life experience is significant for the expression of verbal creativity, yet very frequently such life experience cannot be assessed by any scores or other units of measurement. In other words, everyday life develops creativity, and creativity creates life.

The common average study grade of the pre-service Technology teachers of the Baltic countries is higher than 80 % (8 points): it was 8.25 in the Lithuanian group of informants, 8.99 – in the Latvian group, and 8.23 – in the Estonian group (Tables 1, 2, 3, 4). Higher than average grades for academic achievements show not only the knowledge acquired during pedagogical studies, but also better than average skills and accumulated personal experience which can be creatively applied in the informants' practical pedagogical activity in order to flexibly solve the issues of organizing the teaching/learning process (Scott, 2007; Hong, Horng, 2008; Bradley, 2011; Urhahne, 2011).

*The dimension of consumer culture in the expression of the informants' verbal creativity.*

The field of electronics is one of the constituent parts of the curriculum of home economics (Pradinio ir pagrindinio..., 2008). The relevance of this field in the context of consumer culture is unquestionable. The analysis of the qualitative research data revealed that the topic of electronics was chosen in a little bit less than a quarter of all the choices (18 out of 76 choices). Having in mind the fact that in case of free choice of the topic the informant is likely to choose a more appealing, better-known topic, it can be assumed that the field of electronics is familiar and understandable to the pre-service Technology teachers of the Baltic countries.

The first task on the personal verbal creativity expression was related to using objects, their application. One fifth of the informants (4 out of 19) chose the topic of electronics and provided their answers about the possible use of a *wire*. The analysis of the qualitative research data showed that there were five categories distinguished: practical application in the home environment; artistic expression; personal growth; game; sport; destruction (Table 5). The category of practical application at home was divided into two subcategories: using the wire according to its initial purpose and extended possibilities of application. The informants primarily conceived the wire as the electricity "conductor", as a means for "connecting electronic devices". Moreover, the informants also distinguished the aesthetic purpose of electricity – "to illuminate bushes in the garden". In the subcategory of extended possibilities of use the following functions of the wire were identified: connection ("a wire can be used to secure other things", "to tie up pressed hay", "to tie a sack", "to tie firewood"), territorial designation ("to fence a yard"), measurement ("it can be used as a measurement tape"), fastening ("a wire can be used to make a handle

when carrying a heavy bag”), a tool or constructive material (“use it instead of a washing line”, “for hanging the curtains”).

Table 5

**The Possible Applications of a Wire in the Baltic Pre-service Technology Teachers’  
Answers to the Tasks of the Diagnostic Questionnaire on Verbal Creativity Expression**

Category	Subcategory	Statements, e.g.
Practical application at home	Using the wire according to its primary function	<i>conductor; to illuminate bushes in the garden; to connect electronic devices;</i>
	Extended possibilities if use	<i>To use instead of a washing line or to hang the curtains; to tie the pressed hay; to fence a yard;</i>
Artistic expression	Part of clothing, accessories	<i>To create different accessories; to use instead of a belt; to tie up shoes;</i>
	Interior decoration, handicraft	<i>To make a flower; in decorations as supplementary material;</i>
Games, sport	Games, sport inventory	<i>To use as a skipping rope; as a start or finish line in sports competitions; as sports inventory;</i>
Personal growth	Exact sciences	<i>To solve a math task; to use as a measuring instrument by later matching the wire to a specific unit;</i>
	Reflection	<i>The wire can be used to indicate the reference point for embedding the recently finished work;</i>
	Profession, duties	<i>Instructor;</i>
Destruction	Punishment	<i>To use it for physical punishment;</i>

The category of artistic expression was divided into two subcategories: part of clothing, accessories; interior decoration, handicraft. The pre-service Technology teachers of the Baltic countries view the wire as a potential to add exclusive details to their clothing: “to tie up shoes”, to use it “instead of a belt”, to create “different accessories”. The physical characteristics of a wire make it possible to use it “as a supplementary material in decorations” or “for folding a flower”.

In the category of games and sport there was only one subcategory distinguished. The informants apply the wire in sport as “inventory”: “skipping rope”, for marking “the start or the finish line”. The category of personal growth was divided into the following subcategories: exact sciences; reflection; profession, duties. The pre-service Technology teachers can use the wire for “solving math tasks” and experimenting when the wire is used as “a unit of measurement by later matching it to a specific unit” (Table 5).

The organization of Technological education at schools requires a resourceful teacher who is able to search, experiment, discover, present, introduce, interest, engage and help his pupils to learn. An inseparable part of the learning process is reflection which requires time and in-depth understanding. The qualitative analysis helped to discover one ingenious way for using a wire in the process of reflection: “it can be used as a reference point for embedding the recently completed work”. Moreover, the informants related the wire to a specialist who instructs about the future tasks and explains the rules for their completion. It can be assumed that the pre-service teachers of Technologies relate the wire both to opportunities and a certain danger – electricity running through it. The informants’ answers revealed their perception of the significance of security. The last category – destruction – has only one subcategory – punishment. The informants’ answers revealed one more danger caused by the wire – physical punishment. A wire can be used “as a means of punishment”. Such data show that the new generation is familiar with the concept of punishment which is based not only on the humanistic paradigm (Table 5).

The content analysis of the answers to the task on the application of the object demonstrated how versatile the informants’ perception of a wire is. The Baltic pre-service teachers of Technologies identify a wire not only as a conductor of electricity or signals, but also as a thing which reminds of how significant security rules are, as a tool for joining several elements, designating a territory, measuring or fastening other objects, as a constructive material, an item of sports or game inventory, a constituent part of clothing and interior details, and as a learning tool which helps to understand exact sciences

better and prompts self-reflection. The aforementioned facts make it possible to assume that the Baltic pre-service Technology teachers not only have some understanding of electronics, but also reveal their positive attitude to reusing objects by expanding their possible applications.

The second task on the expression of verbal creativity was related to the possible consequences of a provided situation. Half of the informants (10 out of 19) chose the topic of electronics and presented their considerations about the following situation: what would happen if the price of electricity grew by ten times. The analysis of the qualitative research data allowed distinguishing three categories: fluctuation, alternatives and the changing lifestyle (Table 6).

Table 6

**The Baltic Pre-service Technology Teachers' Opinions about the Consequences of Tenfold Price of Electricity in the Answers to the Diagnostic Questionnaire Tasks on Verbal Creativity Expression**

Category	Subcategory	Statements, e.g.
Fluctuation	Absence of change	<i>Nothing would change;</i>
	Change of time periods	<i>Some people would start living like primitive men did; everything would stop in the world, we would return to the beginning;</i>
Alternatives	Use of alternative energy	<i>Would use other, alternative energy;</i>
	Human and research initiative	<i>People would invent something new; science would start degenerating; I would employ hamsters &lt;...&gt;;</i>
Changing lifestyle	Changing home environment	<i>All houses would get a wood burning stove and would cook food on them; people would make everything with their own hands;</i>
	Factors determining the changing lifestyle	<i>Bigger expenses; all the devices would be replaced by manual work (like in the old times); people would start starving; nothing, absolutely nothing would work; it would be dark everywhere;</i>
	Changing habits of consumption	<i>Chaos would dominate in the world or some specific country since people are not able to economize electricity; nobody would purchase unnecessary electronic devices;</i>
	Migration	<i>A lot of people would migrate to the countries where electricity is cheaper;</i>
	Frugality	<i>Parents would economize electricity; people would lead a more frugal life;</i>

The pre-service Technology teachers of the Baltic countries image two different possible solutions of the situation – two distinct variants; hence, the category of change is divided into two subcategories: absence of change and change of time periods. The first possible variant – “*nothing would change*” – is based on the observation of people’s behavior. In the last three decades the Baltic countries have experienced numerous political, economic and social changes, shocks or crises, however, people remained stable and stoic. The other possible variant is related to cardinal, utopian changes: “*some people would start living as the primitive men did*”, “*it is likely that we would return to the old times and would live without electricity*”, “*everything would stop in the world, we would return to the beginning*” (Table 6). Such considerations show the extent of electricity consumption which can be related to the way of life of the modern civilization.

The category of alternatives consists of the following subcategories: using alternative energy; human and research initiative. The informants viewed the increased price of electricity as an incentive to turn to alternative energy following the EU directives. This other alternative is the results of people “*being used to the pleasures of electricity*”. One informant demonstrated his knowledge of physics by applying his knowledge for electricity production: “*I would employ my hamsters that turn a wheel. I would attach a generator to the wheel and in this way I would produce energy. Then I would only have to pay for*



*hamsters' food*". This example validates the benefit of knowledge for the expression of verbal creativity. The in-depth perception of phenomena enables their loose, playful interpretation.

The category of changing lifestyle consists of the following subcategories: the changing home environment; factors determining the changing lifestyle; changing consumption habits; migration; frugality. In the subcategory of the changing home environment the following changes were observed: home equipment ("*all houses would get a wood burning stove*", "*there would be no need to wire houses*"), cooking ("*food would be cooked on a wood burning stove*", "*food would be cooked on a stove*", "*we would eat cold food*"), artificial light ("*there would be only candle light*", "*in the evenings people would sit by the candles*") and activity ("*people would get water in wells, rivers, lakes*", "*people would make things manually*", "*children would spend only 30 minutes at the computer*") (Table 6).

In the subcategory of factors determining the changing lifestyle, the pre-service Technology teachers distinguished a financial factor ("*bigger expenses*", "*the country would have the necessary finance to be able to use so much electricity*", "*people would not be able to use electricity in their homes since they would not afford it*") which would also affect the manufacturing process ("*all the devices would be replaced by manual work (like in the old times)*"; "*factories and other institutions would stop working*"), sales ("*produce would become more expensive in shops*", "*they would be able to sell their produce*", light (electricity) would become more expensive, hence, production, materials and technology would also be more expensive. Consequently, the prices for the produce made would be much higher"), every person's life conditions ("*nothing, absolutely nothing would work*"; "*people would have no hot water*", "*most people would have no electricity*"), people's welfare ("*it would be harmful both for private and legal entities*", "*people would start starving*") and their sophistication ("*the quality of life would significantly drop since not everybody would be able to use the media*").

In the subcategory of the changing consumption habits it is possible to distinguish a bigger use of alternative goods ("*all kinds of candles would disappear from the shops*"), and the possible results of that would be redistribution of market leaders in the market ("*candle manufacturers would become really rich*") and a smaller use of electronic devices ("*some people would refuse some electronic devices*", "*most electronic devices would disappear*", "*would not purchase unnecessary electronic devices*"). Moreover, the informants foresaw a partial rejection of technological progress by acknowledging the advantages of the older technological decisions: "*smart phones would be replaced by simple older phones whose batteries serve much longer*". It has to be noted that the smaller consumption of goods is not related to people's worse health or poorer quality of life. However, the same cannot be said about the consumption of electricity. The analysis of the qualitative research data repeatedly revealed the extent of electricity consumption which can be related to people's welfare and harmful consumption habits: "*there would be chaos in the world or some specific country since people cannot economize electricity*". The influence of habits of comfort on people's everyday life is supported by the following idea: "*in order to charge their phone, people would have to go to the neighboring country*". People's attachment to the comfort provided by electricity distinguished by the informants can also be observed in the subcategory of migration: "*a lot of people would migrate to places where electricity is cheaper*". The last subcategory – frugality – covers the foreseen limitation of consumption habits related to people's financial welfare: "*people would live more frugally*", "*my parents would economize electricity*" (Table 6).

The content analysis of the answers about the possible consequences of the given situations shows the informants' comprehension of the causes and consequences of the consumption process. The growth of electricity price is viewed by the Baltic pre-service Technology teachers as an opportunity to use more alternative energy and thus follow the EU directives. Nevertheless, the more expensive electricity would introduce some changes in people's everyday life, production, sales and formation of new habits. The analysis of the research data shows the informants' optimism in the field of smaller consumption of electronic equipment and power in general, which is directly related to people's welfare and the crucial pre-condition for the modern civilization. Comfort provided by electricity can even become a reason for emigration.

The third task on personal verbal creativity expression is related to the variety of objects. One tenth of the informants (2 out of 19) chose the topic of electronics and provided a list of devices economizing

electricity. The analysis of the qualitative research data revealed two subcategories: home equipment and electronic devices providing comfort (Table 7).

Table 7

**The List of Energy-saving Devices Provided by the Baltic Pre-service Technology Teachers in their Answers to the Tasks in the Diagnostic Questionnaire on Verbal Creativity Expression**

Category	Subcategory	Statements, e.g.
Home equipment	Kitchen appliances	<i>chopper; fridge; electric stove;</i>
	Sources of light	<i>LED lights; energy-saving bulbs; flashlight;</i>
Home appliances providing comfort	Personal appliances	<i>telephone; telephone charger; tablet;</i>
	Entertainment appliances	<i>TV set; radio;</i>

The category of home equipment consists of kitchen appliances and sources of light. According to the informants, “*food chopper*”, “*electric stove*” and “*fridge*” are energy-saving kitchen appliances. This statement makes it possible to argue that pre-service Technology teachers have insufficient knowledge of physics, hence, are not aware of the operation principles of energy-saving devices. In the category of sources of light the informants included “*LED lights*” and “*flashlights*”. These examples can be found in almost all textbooks of home economics in the Baltic countries and that in turn facilitates the formation of sustainable consumption.

The category of home appliances providing comfort consists of two subcategories: personal appliances and entertainment appliances. “*Telephone*”, “*mobile telephone charger*”, “*tablet*”, “*computer*” and “*electric shaver*” were attributed to the subcategory of personal appliances (Table 7). The aforementioned new generation devices can be attributed to the group of energy-saving devices.

The content analysis of the informants’ answers to the task on energy-saving devices revealed a necessity of knowledge of physics for the development of consumer culture. On the basis of background knowledge of physics is it possible to develop the pupils’ critical thinking and in-depth perception of causes and consequences of consumption habits. It can be assumed that the content of textbooks and mass media facilitate the formation of sustainable habits of consumer culture.

The fourth task on personal verbal creativity expression is related to description of objects. Every tenth informants (2 out of 19) chose the topic of electronics and provided a list of words and word combinations which could be used to describe saving electricity. The analysis of the qualitative research data shows that there are two categories distinguished: causality and frugal behavior (Table 8).

Table 8

**The List of Descriptions about Saving Energy in the Answers of the Baltic Pre-service Technology Teachers’ Answers to the Diagnostic Questionnaire Tasks on Verbal Creativity Expression**

Category	Subcategory	Statements, e.g.
Causality	Sustainable development	<i>Green thinking; conservation of fossil fuel; human conservation;</i>
	Psychological aspect	<i>Necessary;</i>
	Economic aspect	<i>Saving money; small salary;</i>
Frugal behavior	According to strategy	<i>considered; cautious; pre-supposed;</i>
	According to content	<i>hard; complicated; useful; useless; popular;</i>
	According to activity	<i>practice; variant of one possibility; stinginess;</i>
	According to consequences	<i>darkness; robberies;</i>

The category of causality consists of the following categories: sustainable development; psychological aspect; economic aspect. The titles of the subcategories reflect the motives proposed by the informants on the basis of which one can save electricity. The idea of sustainable development combines the components of natural resources (“*conservation of fossil fuel*”), people (“*human conservation*”) and

thinking (*“green thinking”*) and forms the habits of consumption. Conservation of energy can be prompted by the present or future economic reasons (*“small salary”, “savings”*) as well as by psychological perception (*“necessary”*). The category of frugal behavior comprises the following subcategories: on the basis of strategy; on the basis of content; on the basis of activity; on the basis of consequences. The titles of these subcategories name the stages of the implementation of frugal behavior. First of all, strategies are selected (*“considered”, “cautious”, “possible”*), then it is concentrated on the content (*“hard”, “complicated”, “useful”, “useless”, “popular”*), then some specific course of action is chosen (*“practice”, “variant of one possibility”, “stinginess”*) and, finally, the consequences of frugality are considered (*“darkness”, “robberies”*) (Table 8).

The content analysis of the answers to the task on the description of saving energy shows that the informants are aware of the principles of project work and are able to apply them flexibly. The analysis of significant activity or phenomenon according to the principles of project work can become relevant for studying consumer culture.

## Conclusions

The curriculum of general education schools is formed bearing in mind the challenges of the period. Due to this reason, the programmes of Technological education have been reformed in the Baltic countries and their implementation was based on the method of projects. The project method merges theory and practice, research and empirical knowledge, orientates at self-recognition and creating culture, whose inseparable part is consumer culture. In the context of organizing the implementation of Technological education programmes special emphasis is placed on creativity, both from the perspective of a creator and consumer. In lessons of home economics learners perceive themselves as creators and consumers functioning in the topical spheres of textile, nutrition, constructive materials, electronics and design.

The Baltic pre-service Technology teachers in the final years of their studies have a higher than average grade for their academic achievements (more than 80 %) which makes it possible to assume that the informants possess higher than basic knowledge of their study subjects. The analysis of the qualitative research shows that the informants, irrespective of their average grades, possess all the target features of verbal creativity expression – creative fluency, flexibility and originality. Moreover, it was observed that there are no tendentious correlations between the scores of the informants’ verbal creativity expression and their average grades for academic achievements. However, it was noted that in all the groups there were informants who clearly distinguished themselves by the highest and lowest scores of verbal creativities. The analysis of the research data makes it possible to argue that people’s individual life experience is significant for their verbal creativity expression. The aforementioned achievements of the informants create favorable conditions for the organization of a successful educational process since educational interaction among the participants of the education process is initiated and maintained in a verbal form.

The analysis of the qualitative research data revealed that one fourth of all the selected tasks meant for the identification of people’s verbal creativity expression were from the topic of electronics (18 choices out of 76). The content analysis of the tasks on the possible applications of a wire, increased price of electricity, description of economizing and listing energy-saving devices makes it possible to argue that the tasks on verbal creativity expression reveal the dimension of consumption and that the field of electronics is familiar and comprehensible to the pre-service teachers of Technologies of the Baltic countries. Moreover, the informants revealed a positive attitude to reusing things by expanding their possible applications, perception of sustainable development ideas, and responsible consumption on the personal, local and global scales. The content analysis of answers shows the informants’ awareness of the principles of project work and their ability to employ this method in a flexible way. The activity or phenomenon analysis carried out according to the principle of project work can be beneficial for quality studies of consumer culture. The analysis of the qualitative research data shows that knowledge, especially knowledge of physics, is essential for developing consumer culture and verbal creativity expression. Only on the basis of knowledge (e.g. of physics) it is possible to develop the learners’ critical thinking and in-depth comprehension of the causes and consequences of consumption habits. The in-depth understanding creates preconditions for free and playful interpretation of phenomena which can

have direct influence on people's verbal creativity expression and, consequently, on their creative activity and decisions.

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