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**CONSTRUCTIVELY ALIGNED ECONOMICS CLASS:  
ACHIEVING INTENDED LEARNING OUTCOMES BY  
USING CLASSROOM GAME**

Master's Thesis

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I hereby confirm that I have written this master thesis independently. The sources of any work or ideas of other authors, as well as any literature or other sources that have been used for the purposes of writing this thesis, have been referenced.

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Eva Roosaar

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## INTRODUCTION

According to The Estonian Lifelong Learning Strategy 2020 (The Estonian Lifelong...2014: 4-5) all curricula adopted in formal education at the State level during the past decade have emphasised the focus on the learner, transferable skills, constructive learning, and learning/teaching not only factual knowledge, but also how to learn and solve problems. But the problem is that this understanding of a new approach for learning has been adopted only in theory. One of the causes may be, according to a recent study (Õpetajate täiendusõppe...2015), that although Estonian teachers are competent in their subjects, they lack of general pedagogical skills. Younger teachers do not have enough experience of coping with different learning situations and more experienced teachers are not willing to change already embedded methods and approaches.

The same problem, i.e. the prevailing and outdated traditional learning approach, can also be found in economics classes. Furthermore, it could be said that a typical economics lesson is lecture oriented (Becker 2000: 113) and relies heavily on visual presentation of information and theoretical concepts. In other words, teacher-centred approach is strongly dominating, which according to Biggs and Tang (2007) most commonly results in a form of mere knowledge transmission.

But why do we even need to change the approach for learning, set focus on a learner or promote the importance of transferrable skills? The answer to this question starts with understanding the importance of individual learner being a part of much bigger system, i.e. society. When supporting learner's individual and social development, they most likely feel empowered to aspire towards personal fulfillment later in their family and work life. By emphasizing individuality and allowing learners to construct knowledge themselves, rather than spoon feeding it to them, a society of independent and subsistent individuals emerges. This kind of improved society is capable of successfully coping

with constantly changing economic and social environment and therefore helps to assure the Estonian sustainability as a country. (Th Estonian Lifelong...2014) Therefore, also economics classes should educate learners to become good at understanding and solving economic problems rather than just naming them.

There are a lot of studies carried out both on constructive approach to learning and economic classroom games but not often in the same study. Studies about constructive approach and alignment (for example Biggs 1996, 1999, 2007) tend to be pedagogical and emphasise the learning process in general. Studies on economic classroom games, on the other hand, focus on mere descriptions of games encompassing different economic topics (for example Miller 1971; Delemeester, Brauer 2000; Park 2010 and many others). The current research attempts to merge economic classroom games and pedagogical grounds of constructive approach into one comprehensive description of how classroom games enhance the learning environment in economics class.

Therefore, the goal of the current thesis, in addition to explaining why learner-centred and constructively aligned learning activities are important, is to propose and describe a specific teaching method, that supports a learner-centred approach in economics class. After describing how the particular method works in a certain case using Bigg's constructive alignment model, economics teachers should be aspired not only to think about what method they are using, but also realize why they are using it.

More specifically, the author aims to describe how classroom game as a teaching method can help pupils to achieve intended learning outcomes in economics class. Specific research questions are as follows:

- Case study research question: How do classroom games as a teaching method help pupils to achieve intended learning outcomes in economics class?
- Questionnaire research question: What kind of learning outcomes did pupils report to have achieved as a result of a classroom game during their economics class and what was their attitude towards the classroom game?
- Observational research question: What kind of learning outcomes were achieved according to observation during the economics class?

To achieve the set goal and find answers to research questions both theoretical overview is given and a case study research is carried out.

In the process of writing the current thesis, mainly two kinds of previous writings are used. Firstly, general pedagogical studies and theories about learning/teaching processes are discussed to give the reader some background information about the phenomenon. Secondly, a more specific focus is set on classroom games as a teaching method. From the latter, also theoretical propositions for a case study research are derived.

The research in question is a descriptive case study encompassing both a written questionnaire and observation as data collecting methods. Furthermore, the questionnaire represents a self-assessment instrument and the observation an observational assessment instrument in the constructive alignment model.

The process of research starts with a construction of literature overview, from where pedagogical background information and theoretical propositions for the case study are gained. On the basis of these propositions, a questionnaire is designed, which are addressed to participants of study sessions organised by the researcher using a particular classroom game as a teaching method. These study sessions are also video recorded and later used to perform an observation.

The trustworthiness of the research is assured with data triangulation, meaning that one object of analysis was to find out if observational data also supported the results collected with the help of questionnaire.

The pedagogical concepts essential for understanding this study are explained and discussed in the first part of the thesis.

**Keywords: CONSTRUCTIVE LEARNING APPROACH, CONSTRUCTIVE ALIGNMENT, LEARNER-CENTRED APPROACH, CLASSROOM GAMES, TEACHING ECONOMICS**

# 1. THEORETICAL BACKGROUND

## 1.1. Traditional learning vs. constructive learning

Over the years there have been many different approaches to learning, each of which being popular and reasoned by their followers. Three basic types of learning theories include behaviourism, cognitivism, and constructivism.

The traditional learning approach, i.e. behaviourism, is the earliest of the three classical theories of learning. It claims that the transmission of information from teacher to learner is essentially the transmission of the response appropriate to a certain stimulus (Skinner 1976). In other words, the learner is merely a passive entity who responds to the environmental stimuli.

The cognitive revolution replaced behaviourism in the 1960s as the dominant paradigm. Cognitivism focuses on inner mental activities, meaning that opening the “black box” of the human mind is valuable and necessary for understanding how people learn. Mental processes such as thinking, memory, knowing, and problem-solving became the new focus of learning. (Nalliah, Idris 2014: 50)

Shifting further from the ideas of cognitivism, a new paradigm emerged. Opposite to processes involved in behaviourism, constructivism relates to a contextualized process of constructing knowledge rather than acquiring it. In other words, knowledge is constructed based on personal experiences and speculations about the environment (Nalliah, Idris 2014: 50). Tynjälä and others (Tynjälä et al 2009: 271) have stated that the most important pedagogical implications of constructivism are as follows:

- attention is paid to learners’ meta-cognitive and self-regulative skills and knowledge,

- negotiation and the sharing of meaning through discussion and different forms of collaboration are emphasised,
- multiple representations of concepts and information are utilized,
- the situational nature of learning is taken into account and thus authentic or simulated environments are preferred,
- learning processes are characterized by problem-solving, the active processing of information, and the production of concrete artefacts in the course of learning,
- the role of the teacher is to support and facilitate the learning process of students, and,
- assessment procedures are embedded in the learning processes.

Furthermore, social constructivists view learning as a social process. It does not take place only within an individual, nor is it a passive development of behaviours that are shaped by external forces (McMahon 1997). Meaningful learning occurs when individuals are engaged in social activities.

The approaches towards learning have and should transform in time due to many relevant factors that are in constant change. These are for example access to information and technological innovations. At some point, the traditional approach may have been justifiable because teacher was the only source of information and simply transmitting the knowledge was essential. In the modern world, the amount of information available is endless and therefore the main role of the teacher should no longer be the mere mediator of information (The Estonian Lifelong...2014) but rather the instructor who creates the appropriate learning environment that helps learners to comprehend that information.

### **1.1.1. Teacher-centeredness vs. learner-centeredness**

Being stuck in traditional learning approaches at the present time may lead to classrooms looking like a one-person show with a largely uninvolved learner (Khalid, Azeem 2012: 172). This one-way communication, teacher-centeredness, is described by Harden and Crosby (2000: 335) as a learning strategy where the focus is on the teacher transmitting knowledge, from the expert to the novice.

Teacher-centeredness assumes that students have the same level of background knowledge in the subject matter and are able to absorb the material at the same pace (Lord 1999: 23). Therefore, the teacher-centred approach is associated largely with the idea of what the teacher does. Learner's achievement becomes the most important standard in teacher-centered curriculum and since teachers are driven to meet the set standards, they often sacrifice the needs of the learners to ensure those standards are met.

In contrast, constructivistic or learner-centred teaching emphasises knowledge and skills that are constructed by students, rather than transmitted by teachers (Brackenbury 2012:13). It is a teaching strategy that includes replacing lectures with active learning and holding students responsible for their learning, and using self-paced and/or social learning (Felder, Brent 1996: 43).

Firstly, it implies a view of teaching that is not just about facts, concepts and principles to be covered and understood, but also encompasses the necessity to be clear about what it means to 'understand' content in the way that is specified in the intended learning outcomes and what kind of teaching/learning activities are required to achieve those stipulated levels of understanding. (Biggs, Tang 2007: 19) The process of learning no longer depends on what the teacher does, but rather on what the learners do.

Secondly, it is important that in the case of learner-centered teaching, the knowledge and skills that are constructed are purposeful, relevant, and transferable. The terms "surface learning" and "deep learning" could be used when describing those different types of knowledge and skills. The quality of knowledge acquired is in turn connected with the approaches that learners take toward learning and can also be expanded on by using concepts of „surface learning“ and „deep learning“ (Brackenbury 2012:13).

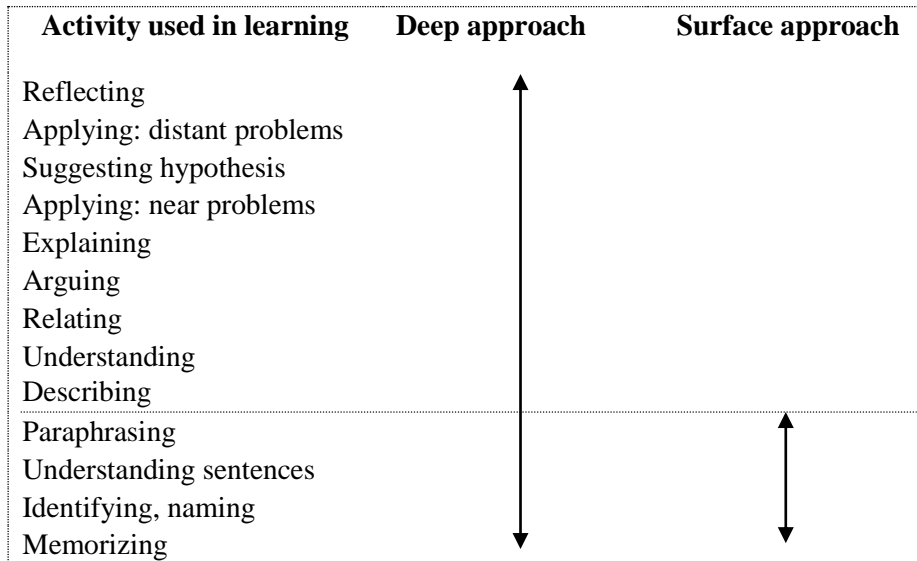
### **1.1.2. Surface learning vs. deep learning**

There are essentially two different approaches that learners can take: surface and deep learning approaches. These approaches describe what learners are doing in their opinion whilst studying and why they are doing that (Houghton 2004: 9). The surface approach is derived from the learner's wish to accomplish the task with the minimum effort to

create an impression that requirements have been met. The goal is just to memorize all the information and complete the task, without thinking about new ideas and their previous set of knowledge. Learners are not given the chance to rely on previous studies (Fry, Ketteridge, Marshall 2009: 11). Studying becomes emotionally hard and, therefore, the main goal is to get it over with. It induces negative feelings like anxiety, cynicism and boredom (Biggs, Tang 2008).

When it comes to the deep approach, learners pursue a greater understanding and appreciation of study subjects. They analyse, associate new material with previous studies, coordinate pieces to compound theories and appraise different disquisitions. Learners with the deep approach develop personal estimations and views toward subjects. (Ibid)

The deep approach does not appear spontaneously and in many cases learners themselves lack necessary abilities to acquire such approach themselves (Karm 2014: 4). Surface and deep approaches to learning are also not personality traits, as is sometimes thought, but are most usefully thought of as reactions to the teaching environment. Desirable student learning depends both on student-based factors – ability, appropriate prior knowledge, clearly accessible new knowledge – and on the teaching context, which includes teacher responsibility, informed decision-making and good management. Since we often can not change the student-based factors, we should strive for enhancing the teaching context. (Biggs, Tang 2007: 29) Two approaches can be induced with different learning activities which in turn reflect the quality of knowledge gained and learning outcomes achieved (see Figure 1).



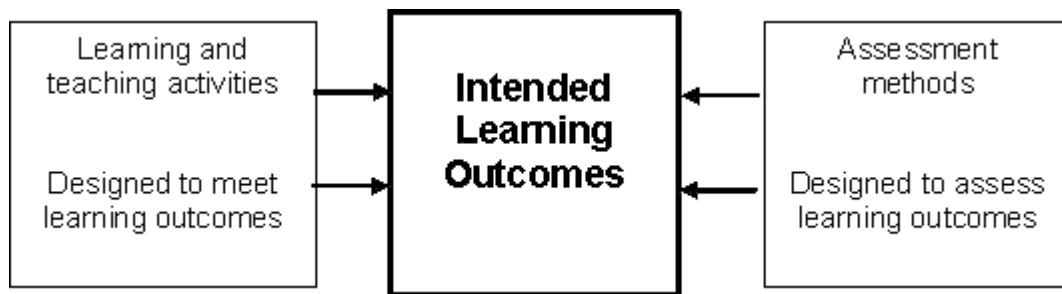
**Figure 1.** Learning activities in case of deep learning and surface learning (constructed by the author on the basis of Biggs, Tang 2007: 27).

The bottom line is that the surface approach is to be discouraged and the deep approach encouraged (Biggs, Tang 2007: 26). To encourage the deep approach, we need to prevent learners from using the surface approach by discouraging the use of low-level and inappropriate learning activities and supporting the appropriate learning activities. For that, intended/desired learning outcomes should be constructively aligned with proper assessment and teaching methods.

## 1.2. Importance of constructive alignment while planning learning activities for pupils

Constructive alignment has two aspects. The „constructive“ aspect refers to the idea that students construct meaning through relevant learning activities. That is, meaning is not transmitted from teacher to learner, but is something learners have to create for themselves. The „alignment“ aspect refers to what the teacher does, which is to set up a learning environment that supports the learning activities appropriate to achieving the desired learning outcomes. The key is that the components in the teaching system, especially the teaching methods used and the assessment tasks, are aligned with the learning activities assumed in the intended outcomes. (Biggs, Tang 2007: 52)

The process of constructive alignment (see figure 2) starts with determination of outcomes teachers intend pupils to learn. After that teaching and assessment methods should be aligned according to those outcomes. Learning is constructed by what activities the students carry out. Likewise, assessment is about how well learners achieve the intended outcomes, not about how well they report back to teachers what they had been told. (Biggs 1996: 350-360)



**Figure 2.** Constructive alignment of intended learning outcomes with learning and teaching activities and assessment methods (constructed on the basis of Biggs 1999).

Constructive alignment encourages clarity in the design of the class and transparency in the links between learning and assessment. In a truly constructively aligned class, it facilitates deep learning as the activities are designed for that sole purpose. (Houghton 2004: 29)

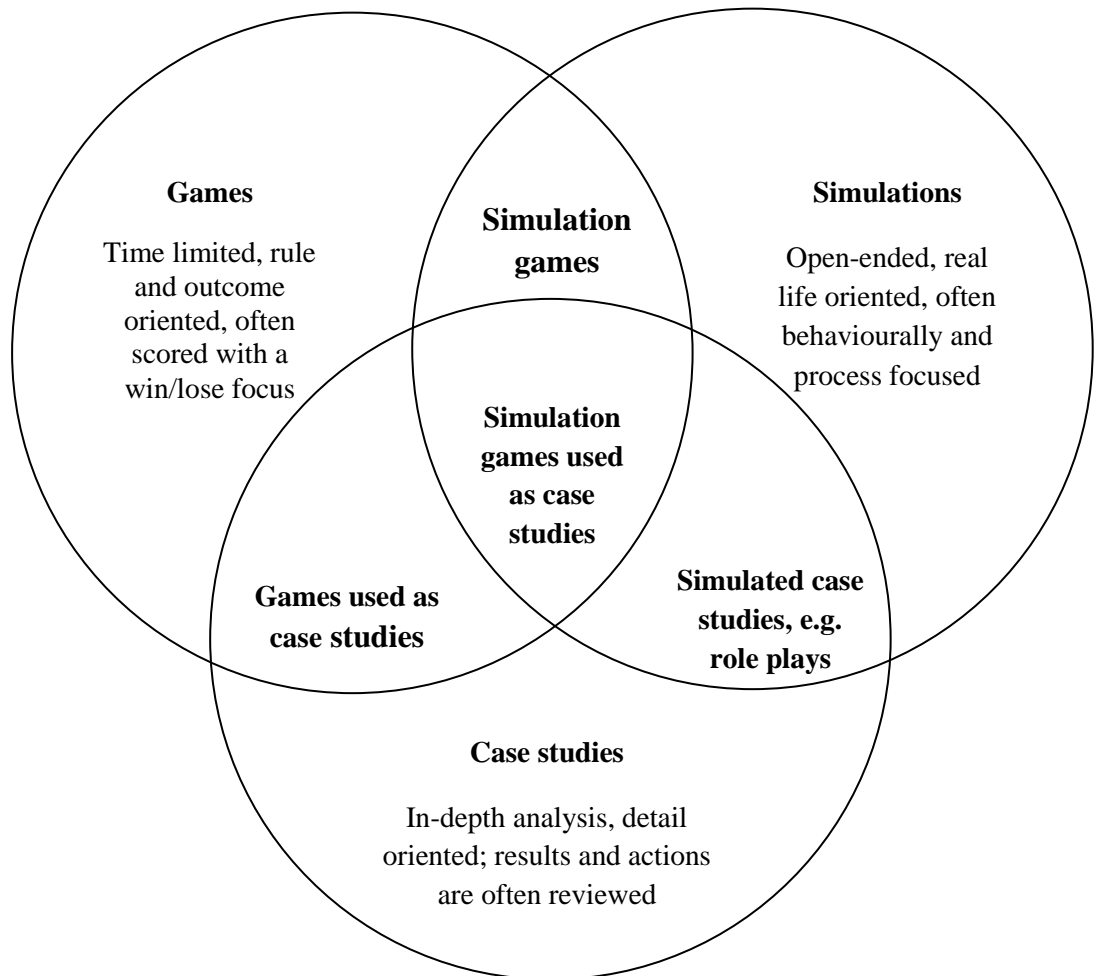
### 1.3. Classroom games as a teaching method

Among other teaching methods that could be used to create a learner-centred learning environment, which induces the deep learning approach and should therefore be constructively aligned, classroom games as a teaching method is chosen to dissect the specific phenomenon in this case study. The motive for choosing this particular method derives from the reason mentioned in the introduction, i.e. previous studies about economic classroom games are most often restricted with mere descriptions of the game content wise and do not discuss the functioning mechanism of the method.

When using play in the process of teaching, the key elements entail interaction within a predetermined context, often involving forms of competition, cooperation, conflict or collusion. These interactions are constrained by set rules and procedures (Feinstein, Mann, Corsun 2002: 735) and may have different forms depending on various aspects.

In the broadest sense, interactions falling under the criteria mentioned above can be placed under a concept of simulations, games and role plays (SGRP).

Although the differentiation between methods that comprise SGRP may not always be clear, some basic conceptualisation can be presented (see Figure 2).



**Figure 3.** A conceptualisation of games, simulations, role plays and case studies (constructed by the author on basis of Ellington *et al.* 1982).

For example a typical simulation involves competing groups of learners and takes about one to two hours to complete (Davis 1993: 137), in contrast with role plays, which usually last less than an hour (Bowell, Eison 1991: 61). Simulation can allow experiments to be conducted within a fictitious situation to show the real behaviours and outcomes of possible conditions. In the case of role plays, participants act out the role of

a character in a particular situation following a set of rules and interacting with other role players (Lean, Mozier, Towler, Abbey 2006: 228). Case studies are most realistic forms of SGRP. They are „short story“ presentations of particular circumstances which require analysis and discussion. Problem situations are described and suggestions are sought on ways to resolve them. (Leigh, Kinder 2001: 19)

Classroom games include elements from games, simulations and case studies and can therefore be categorized as simulation games used as case studies. One very important aspect concerning classroom games is the manner in which they are organised. They are hand run, opposite to simulations that can often be computerized. Classroom games can inspire pupils to learn more about a topic and provide an easy way to engage students in discussions. As argued in the terminology of Kolb (2005: 33), classroom games provide the concrete experience on which reflective observation can be based. The teacher can use this experience in classroom discussions and guide the learners towards ‘abstract conceptualization’, i.e. the understanding of new theoretical concepts, which can then be used to analyse the data and other phenomena. Another advantage of classroom games is that they work well for all levels of learners. Classroom games can introduce a topic in a comprehensible way to learners from many different backgrounds and skills, in particular to those with low mathematical skills. (Balkenborg, Kaplan 2010: 3)

## **1.4. Using case study research method for studying activities in the classroom**

### **1.4.1. Case study method**

A case study is an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident (Yin 2003: 13). In other words, case study research is applicable when it is impossible to distinguish studied phenomenon from the environment it is happening in, i.e the context. It is opposite to the laboratory environment, where the whole idea of the study usually depends on the isolation between the phenomenon and context. Case studies may be considered when either research focuses on questions like „how“ and „why“, the researcher is not able to

manipulate the behaviour of participants in the study (Ibid 2003: 6), or in a situations when phenomenona studied are little known or poorly understood (Leedy, Ormrod: 149).

The cases in question may represent a typical “project” among many different projects. In this instance, the lessons learned from these cases are assumed to be informative about the experiences of the average case. Cases can also represent a critical test of existing theory or a rare or unique circumstance (Yin 2003: 48).

Case study research can be categorized as explanatory, exploratory, and descriptive (Yin 2003: 17) or intrinsic, instrumental, and collective (Stake 1994: 242-243) deriving from the aim of the case study. The main goal of the descriptive case study is to assess a sample in detail and in-depth, based on an existing theory (Tobin 2010).

From the perspective of analysed units, case studies can be either single case or multiple case studies. Two types of single case studies can be distinguished: those using holistic designs and those using embedded units of analysis. Within the single case may be incorporated subunits of analyses, so that a more complex or embedded—design is developed. The subunits often add significant opportunities for extensive analysis, enhancing insights into the single case. (Yin 2003: 52-53) The multiple case study is often equated with multiple experiments and is done when study requires more than a single case (Baxter, Jack 2008: 550).

There are several potential data sources for doing a case study, for example documentation, archival records, interviews, physical artifacts, direct observations, and participant observation. Each data source is one piece of the “puzzle,” contributing to the researcher’s understanding of the whole phenomenon (Baxter, Jack 2008: 554). The latter is also important for triangulation of data sources, i.e using evidence from different data sources to cross verify the information and raise the trustworthiness of the case study.

Collected data can be analysed by pattern matching, linking data to propositions, explanation building, time-series analysis, logic models, and cross-case synthesis (Yin 2003: 35), categorical aggregation and direct interpretation (Stake 1995:74), or more

generally relying on theoretical propositions. The proposition is an example of a theoretical orientation guiding the case study analysis. It helps to focus attention on certain data and to ignore other data (Yin 2014: 130). After data analysis is done the results of the case study can finally be reported by using one of the following ways: linear, comparative, chronological, theory building, suspense, and unsequenced (Yin 2003), or creating one's own approach.

In brief, case study research should start with posing a research question and consideration of a potential case. After that, the case should be binded and case study categorized on the basis of the number of units analysed (single case study, multiple case study) and the desired outcome of the case study (descriptive, intrinsic etc.). Later sources of data collection and methods for data analysis should be clarified and finally a suitable technique for reporting the data must be chosen.

#### **1.4.2. Using questionnaires in case study research**

One of the data collecting method that can be used in case study research is a questionnaire, which is a form for presenting research questions and registering answers with a goal of solving the research problem (Õunapuu: 161). The strengths of questionnaire on the basis of Gillham (2008: 6-13) and in the light of current study are low time consumption in collecting the relevant data, easiness of getting information from a lot of respondents very quickly, straightforwardness of analysis of answers to closed questions, respondents' anonymity, lack of interviewer bias and standardization of questions. The main pitfalls, on the other hand, may be that possible misunderstandings cannot be corrected, the wording of questions can have a major effect on answers, respondents talk more easily than they write and seriousness and honesty of the answers cannot be controlled. Nevertheless, with a careful and rigorous design of the questionnaire, many of the weaknesses can and should be avoided.

A questionnaire can be comprised of two different types of questions: closed and open. Closed questions provide answers which are in a specified range and, therefore, there may be a possibility of missing some important aspect of the phenomenon studied. On the other hand, open questions enable respondents to be more creative in their answers,

but analysing and generalizing the answers is more complex. To avoid overwhelming amounts of data that open questions provide, closed questions can be modified into more open form by enabling respondents to add their own answers or allowing them to refuse to give a specific answer. (Õunapuu 2014: 162)

In case of closed questions, the variety of answers should be restricted. For that, different scaling methods can be used. Among others, like nominal and binary scale, Likert's scale can be an effective tool for restricting possible answers. Likert's scale provides us with information for discovering strengths of feelings or attitude towards a given statement (Bell 2005: 142). One important feature in case of Likert's scale is the middle point, which refers to "cannot answer" and, therefore, enables the respondent to refuse from answering specifically (Õunapuu 2014: 166).

When it comes to the validity of the questionnaire content wise, it is suggested to use previously validated and published studies and theories on the same topic when conducting one's own questionnaire, i.e. use the deductive approach (Gillham 2008: 15). This makes the research undertaken more coherent with previous disquisitions and therefore raises the validity of the research on a whole.

After coding the answers gained from closed questions and systematically organising the answers to open questions, the results should be analysed. When it comes to analysing qualitative variables, nonparametric procedures—based on the rank, median or range—are appropriate, as are methods such as tabulations, contingency tables, chi-squared statistics and frequency distribution (Allen, Seaman 2007). Frequency distribution as a method of analysing can be used with all the questions that are scaled either with nominal, binary or Likert's scale. Depending on the number of variables analysed at once, the analysis process itself can be one-, two-, or multi-dimensional (Bryman 2012: 337-346).

### **1.4.3. Using observation in case study research**

Often the primary reason for using observational methods is to check whether what people say they do is the same as what they actually do (Mulhall 2003: 307). It also

enables the researchers to systematically observe and record people's behaviour, actions and interactions. Observation allows the researcher to understand the phenomenon not by searching for universal laws, but by examining interpretations and looking for meanings (Hennink, Hutter, Bailey 2010:170).

Observations can range along a continuum of participant and non-participant observations. In addition, there are two types of approaches that can be relevant: walk through of the spaces and observations with visual aids (Hennink, Hutter, Bailey 2010:178). In the latter case, the use of video recording can facilitate a detailed observation because the video can be stopped and certain scenes reviewed (Ibid:187). Visual aids also allow the researcher to go back in time in case observational research also serves the purpose of data triangulation and therefore some reassurance is needed when concluding the results.

To meet the requirements of systematically organised observation, a field diary is often used. In case of video recorded observation, the diary does not have much importance. Nonetheless, when it comes to analysing the observational data, research questions can be covered only with a structured and systematic observation approach.

#### **1.4.4. Sampling for case study research**

When doing any kind of qualitative research, it is important to use a purposive sample, which means that the sample is selected on content-based criteria (Õunapuu 2014:152). This means that the individuals in the sample must have some kind of connection to the phenomenon that is being studied.

According to Patton's (2002: 230-243) criteria for sampling for case studies, the selection may be done by relying on representativeness. In this case, the whole phenomenon is studied in a sample-centered manner.

Another criterion may be conformity and accessibility. In this case, sampling is done in a way which is most convenient for the researcher due to possible organisational opportunities.

## **2. STUDYING PUPILS' LEARNING IN ECONOMICS CLASS WHILE USING CLASSROOM GAME AS TEACHING METHOD**

The current case study is conducted as a descriptive case study research with an attempt to analyse how classroom games as a teaching method help the pupils to achieve intended learning outcomes in economics class. The reason for choosing case study research for the current study derives from several aspects mentioned above. Firstly, when studying pupils' learning processes they cannot be separated from the learning environment, therefore the boundaries between the phenomenon and context can not be distinguished. Secondly the sample chosen represents a typical case and, therefore, gives information about the average situation.

It is a single holistic case study representing a typical case which consists of learners and the learning environment they are in during an economics class. The analysis is relying on theoretical propositions, which are in this case study also utilized as intended learning outcomes achievable with classroom games.

The current study uses a questionnaire to collect data from respondents mainly because of the time-factor. It enables the researcher to carry out the survey among a group of respondents at once. Besides that, the anonymity of respondents is essential, to ensure the seriousness of the answers. In addition, the questionnaire serves a role in the assessment process, as a self-assessment instrument for learners. The questionnaire is conducted deductively, i.e. stemming from theoretical propositions, and consists mainly of closed questions. Questions with the Likert scale form one-third of the entire survey. Likert' scale enables the researcher to gain insight into respondents' experience. Also, some open questions are presented. Data gained from standardized (closed) questions is coded and analysed with frequency distribution. Results from open questions are

textually analysed by categorizing respondents' answers and therefore providing possible generalizations.

The observation for current case study research is chosen to provide complementary information to data collected from the questionnaire. Similarly to the questionnaire, the observation is also used in the assessment process, but in this case from the perspective of the observer. It is a non-participant observation which is conducted with the help of video recording. Since the author of the study also carried out the classroom game, it was impossible to perform an observation simultaneously to the game actually taking place. Furthermore, video recorded material enables the author to distance herself and observe the phenomena later in more objective manner. Observational data is analysed on the basis of the same theoretical propositions that were utilized when deriving possible learning outcomes that the classroom game could induce (see Table 1), and in the formulation of questionnaire (see Table 2). The aim of the observation is to study achieved learning outcomes from the perspective of the observer.

The whole research is carried out with the full awareness of respondents' parents or representatives. Parents were sent a written consent form prior to the study sessions and pupils had the right not to participate in the study on the basis of that form.

## **2.1. The context of the study**

The classroom game in question is a version of the World Trade Game developed by the Third World development charity Action Aid. John Sloman, a professor from the University of the West of England, has amended it to be suitable for students beginning a course in economics, economic development or international trade. The course of the game is explained as follows: „Students are divided into teams, each of which acts as a separate 'country', with between two and ten students in each team. There are five or six countries in a game. A game thus can be played with between 10 and 60 students. Countries compete against each other to 'manufacture' paper shapes (circles, triangles, rectangles, etc.) and sell them to an international commodity market trader at posted prices, which vary with supply and demand. The objective for each country is to make as much money as possible. There are three types of countries in a game: two rich

industrialised countries; one or two middle-income countries and two low-income countries. The level of income is defined by the amount of resources at the beginning of the game, including means of production, like scissors, rulers etc., and paper. Students are not told this; they find out as they play the game (Sloman 2002). The game is followed by debriefing, during which selected economic topics (as part of the learning outcomes) are discussed in the form of group work or general conversation.

According to John Sloman (2002), the game has various learning outcomes. For the clarity of the study session, the organiser of the game chose six specific economic topics which were discussed more thoroughly after the game during debriefing. The game was supposed to illustrate the following economic concepts: specialisation and division of labour, opportunity cost, supply and demand and the determination of price, the law of comparative advantage, the importance of market power in international trade, and risk and uncertainty.

Besides improving pupils' comprehension of the economic concepts mentioned above, the current classroom game should also give participants the opportunity to experience various emotions concerned with production and trade in an unequal world: emotions such as envy, greed, frustration and the desire to escape poverty by any means. In so doing, it could help students to gain a greater empathy.(Sloman 2002)

In addition to the learning outcomes mentioned by Sloman, other transferable skills could be developed with classroom games (see Table 1). These are theoretical propositions derived from various studies and include the ability to generalise and create associations, capability to comprehend abstract concepts and see their practical relevance. Classroom games should also develop greater appreciation towards role and responsibility, improve one's communication skills and encourage learners to be more critical towards presumptions.

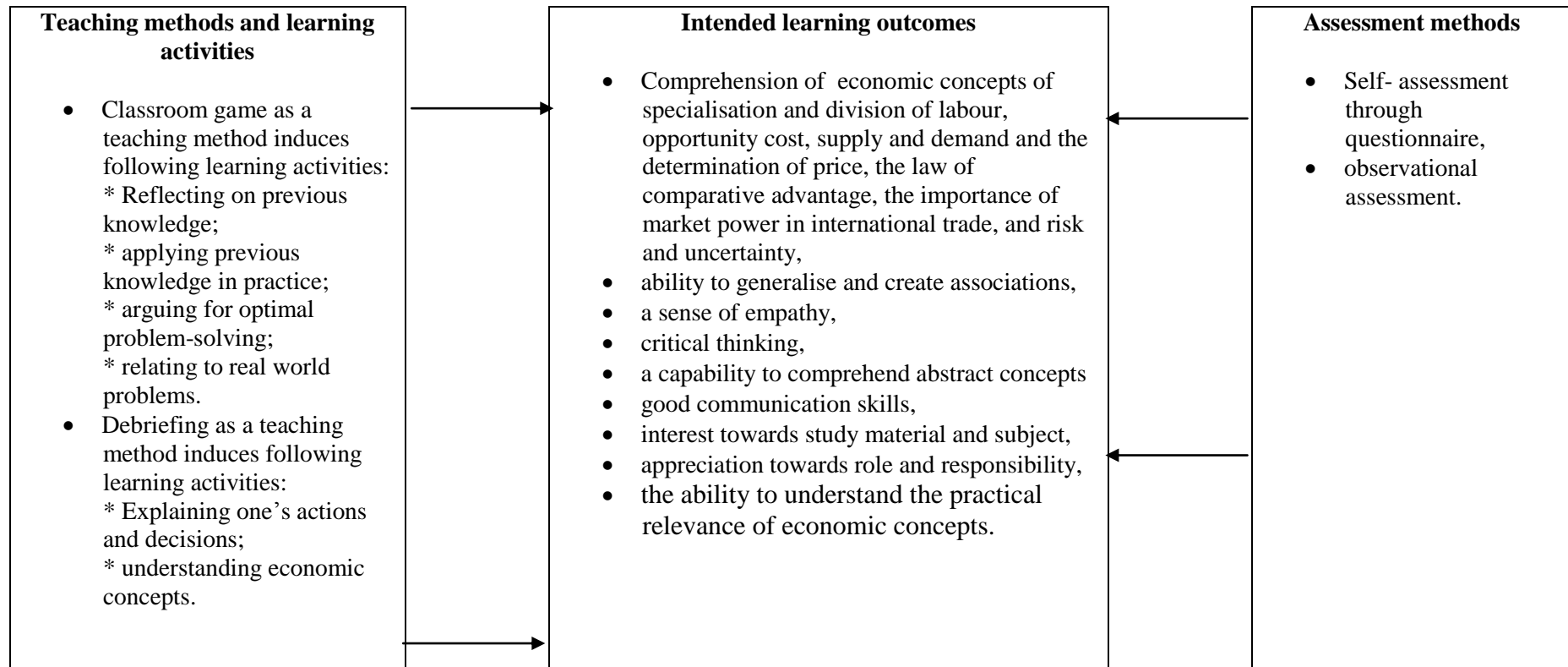
**Table 1.** Theoretical propositions and corresponding intended learning outcomes

Theoretical propositions	Corresponding intended learning outcomes
<p>Classroom games as teaching method enable students to reflect deeply upon their previous knowledge (Alden 1999: 127) and help to improve retention of economics course material (Carter, Emerson 2012: 5).</p> <p>Classroom games as teaching method encourage students to draw together various dimensions of their course of study (Oberhofer 1999: 116)</p>	<p>Ability to generalise and create associations</p>
<p>Participants of classroom game have an opportunity to experience various emotions concerned with production and trade in an unequal world: emotions such as envy, greed, frustration and the desire to escape poverty by any means. In so doing, it could help students to gain greater empathy. (Sloman 2002)</p> <p>Classroom games can encourage students to empathise with the position and feeling of others (Freeman, Capper 1998: 252).</p>	<p>Sense of empathy</p>
<p>Classroom games as a teaching method might encourage students to look beyond their immediate assumptions and expectations, teaches them to be more critical towards presumptions (Sutcliffe 2009: 3).</p>	<p>Critical thinking</p>
<p>Classroom games improve understanding of really complicated and abstract theoretical topics (Balkenborg, Kaplan 2009: 3).</p>	<p>Capability to comprehend abstract concepts</p>
<p>Classroom games can positively contribute to the development of key transferable skills, particularly in terms of communication and social skills (Sutcliffe 2009: 4)</p>	<p>Good communication skills</p>
<p>Classroom games improve motivation and increase the interest towards study material (Balkenborg, Kaplan 2009: 2) and economics related classroom games induce a more favourable impression of economics (Carter, Emerson 2012:5).</p>	<p>Interest towards study material and subject</p>
<p>Classroom games is a method by which to develop in students a greater appreciation of role and responsibility (Sutcliffe 2009:3).</p>	<p>Appreciation towards role and responsibility</p>

<b>Theoretical propositions</b>	<b>Corresponding intended learning outcomes</b>
Classroom games can help students both to understand theoretical arguments better and to value their practical relevance more (Balkenborg, Kaplan, Miller 2010: 1).	Ability to understand practical relevance of economic concepts

Source: constructed by the author.

On the basis of all the possible learning outcomes mentioned above, learning activities incorporated in the specific classroom game and assessment methods applied in the current case study, a context of study is now described using Bigg's constructive alignment model (see Figure 4).



**Figure 4.** Constructively aligned classroom game (The World Trade Game) and debriefing as a teaching methods used in the case study (constructed by the author).

## 2.2. Designing the questionnaire instrument

The questionnaire used in the study incorporated three blocks of questions. Firstly, a set of closed questions with Likert's scale is presented. Answers are given using 5-point Likert's scale ranging from expressing strong disagreement to strong agreement. The next three questions are also closed, but different scaling is used. These questions are presented with binary or nominal scales.

The logic of conducting closed questions content wise is using the same theoretical propositions, i.e. arguments about classroom games as a teaching method from previous theories and studies, mentioned before (see Table 2). Therefore the results from the questionnaire give the researcher an idea of how respondents assess their personal achievement of some of the intended learning outcomes.

**Table 2.** The connection between the questions/arguments and theoretical propositions

Statement/question from the questionnaire	Corresponding argument from previous studies
1.1 I used knowledge gained from previous economics courses during the game	Classroom games as teaching method enable students to reflect deeply upon their previous knowledge (Alden 1999: 127) and help to improve retention of economics course material (Carter, Emerson 2012: 5).
1.2 I understood links between the game itself and topics discussed after the game	Classroom games as teaching method encourage students to draw together various dimensions of their course of study (Oberhofer 1999: 116).
1.3 I felt responsible for my team's success	Classroom games can encourage students to empathise with the position and feeling of others (Freeman, Capper 1998: 252).
1.4 The overall result of the game was surprising for me	Classroom games as a teaching method might encourage students to look beyond their immediate assumptions and expectations, teach them to be more critical towards presumptions (Sutcliffe 2009: 3).

<b>Statement/question from the questionnaire</b>	<b>Corresponding argument from previous studies</b>
1.5.The game helped me to understand some of the topics that were discussed during debriefing	Classroom games improve understanding of really complicated and abstract theoretical topics (Balkenborg, Kaplan 2009: 3).
1.6 I liked communicating with my classmates during the game.	Classroom games can positively contribute to the development of key transferable skills, particularly in terms of communication and social skills (Sutcliffe 2009: 4).
1.7 I developed a greater interest in economics and topics discussed because of the game	Classroom games improve motivation and increase the interest towards study material (Balkenborg, Kaplan 2009: 2) and economics related classroom games induce more favourable impression of economics (Carter, Emerson 2012:5).
2.1 What role did you have in your team (can choose more than one answer)?	Classroom games is a method by which to develop in students a greater appreciation of role and responsibility (Sutcliffe 2009:3).
2.2 Do you think you can use knowledge gained from this study session in real life situations?	Classroom games can help students both to understand theoretical arguments better and to value their practical relevance more (Balkenborg, Kaplan, Miller 2010: 1).
2.3 How would you describe this experience in general (choose 2 answers at most)?	Students fail to take the classroom games seriously, seeing it merely as a break from „real“teaching (Oberhofer 1999: 113).

Source: constructed by the author.

The last three questions addressed to pupils are open in their nature and serve the purpose of finding out the attitude that pupils had towards the specific game and possibly towards classroom games as a teaching method in general. They are asked to point out weaknesses and strengths of the game and evaluate their actions in retrospect to see if they would do anything differently next time when playing the same game. In

the process of organising answers to these questions, it is important to categorize similar answers in order to make conclusions and notice possible abnormalities.

### **2.3. Designing the observation instrument**

The system of observation is again designed according to the same theoretical propositions used when specifying the intended learning outcomes and additional learning outcomes that the specific game was supposed to help to achieve (see Figure 4). The aim of the observation is to find out if the following learning outcomes are achieved according to observation:

- comprehension of economic concepts of specialisation and division of labour, opportunity cost, supply and demand and the determination of price, the law of comparative advantage, the importance of market power in international trade, and risk and uncertainty,
- ability to generalise and create associations,
- a sense of empathy,
- critical thinking,
- a capability to comprehend abstract concepts,
- good communication skill,
- interest towards study material and economics,
- appreciation towards role and responsibility,
- the ability to understand the practical relevance of economic concepts.

### **2.4. Sample**

The sample for this study comprises of fifty-nine ninth grade (age 15-16) pupils from Tartu Hansa Kool, which has its own state confirmed curricula for teaching economics from grades four to nine. The capacity of economics courses in classes four to eight is 14 academic hours per year and in the ninth grade it is 35 academic hours per year. Although the intensity of economics studies is quite low, it is one of the few primary schools in Estonia that teaches economics as a separate subject.

The sample consists of three smaller subgroups, the first of them consisting of 23, second and third both of 18 individuals. These groups played the game at different times and, therefore, the data from the questionnaires was not collected all at once. Despite that, all the data collected was later merged into one set of data without making any distinctions between the different groups.

Although the current economics curriculum in Hansa Kool already includes some learner-centred teaching methods, like group works and computer simulations, the teaching is still largely lecture-oriented. This conclusion can be derived from the stated learning outcomes, which mostly consist of learning activities like explaining, naming, formulating, etc.

The specific sample is chosen by the author mainly because of the accessibility to the subjects and propitious organisational opportunities. Also, the sample chosen can represent a typical case when it comes to strongly prevailing teacher-centred learning environment in economics courses.

## **2.5. Data collection**

### **2.5.1. Collecting data using questionnaires**

Respondents are asked to evaluate their experiences and assess achieved learning outcomes of the classroom game with the help of written feedback questionnaire (see Appendix 1). The questionnaire is presented to each group of respondents right after the classroom game and it takes approximately 2-3 minutes to fill it in. The answering is anonymous and does not require much effort due to a great proportion of standardized questions.

### **2.5.2. Collecting data using observation**

The observation is carried out with the help of video recording. All three classroom games held with different groups of respondents are video recorded during their 90-minute study session, which incorporate both the game and debriefing after the game.

## **2.6. Data analysis**

### **2.6.1. Analysing questionnaire data**

Data gathered from closed questions is coded according to the scale used in the formation of each question. Answers to open questions are categorized into more comprehensive form according to their content and meaning.

All the results obtained from the questionnaire are analysed in one way or another by using frequency distribution. Answers to standardized questions are analysed simply by counting the frequency of different values (mode) and putting them into a comparison with other possible values (percentage). Answers to open questions are categorized and again the frequency of the occurrence of different categories is used to make conclusions.

All the questions are analysed separately, which means that the analysis process is one-dimensional and possible connections between variables are not studied.

### **2.6.2. Analysing observational data**

The analysis of observational data is done by using the intended learning outcomes as reference points to find out if they were achieved from the observer's perspective. The analysis is organised and later reported by clarifying if the learning outcome studied is observable, whether the learning outcome is achieved according to observation, and what the reasoning is behind declaring that the learning outcome is or is not achieved.

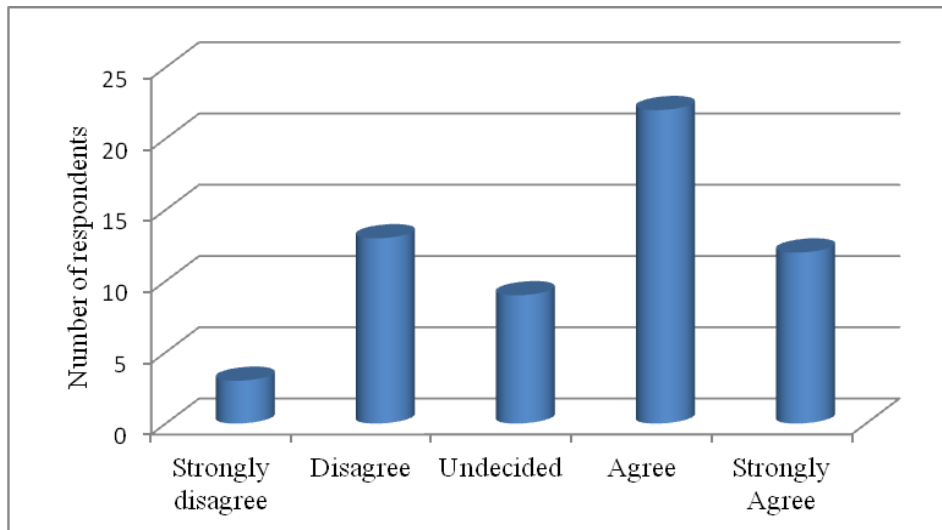
### **2.6.3. Trustworthiness of the study**

The trustworthiness of the research is achieved by triangulation of data. The researcher uses results from questionnaire as benchmarks for studying whether the data collected from the questionnaire could also be supported with observational data.

## 2.7. Results

### 2.7.1. Results acquired from the questionnaire

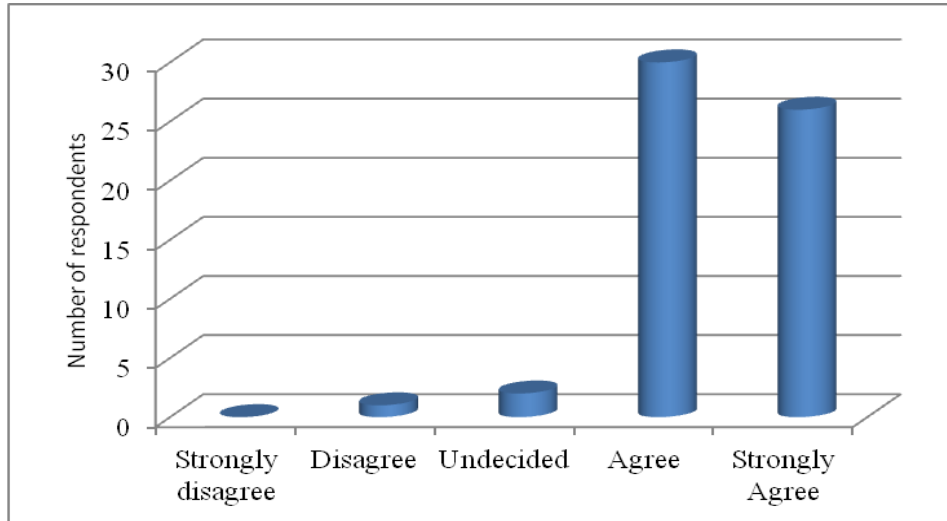
To study if classroom games enable students to reflect deeply upon their previous knowledge and improve retention of economics course material, pupils were asked if they used knowledge from previous economics courses during the game.



**Figure 5.** Frequency distribution of responses to the statement about pupils using knowledge gained from previous economics courses (constructed by the author).

As seen from the Figure 5, the prevailing standpoint (37 %) seems to agree with the statement. Since the sample group has had economics classes in previous years, some of the topics that came up during the game or in the discussion definitely had to be somewhat familiar to the pupils. It can be said that the game probably helped most of the respondents to recall knowledge from previous studies. By recalling specific topics and using them during the game, these subjects were also reprised and, therefore, retained better.

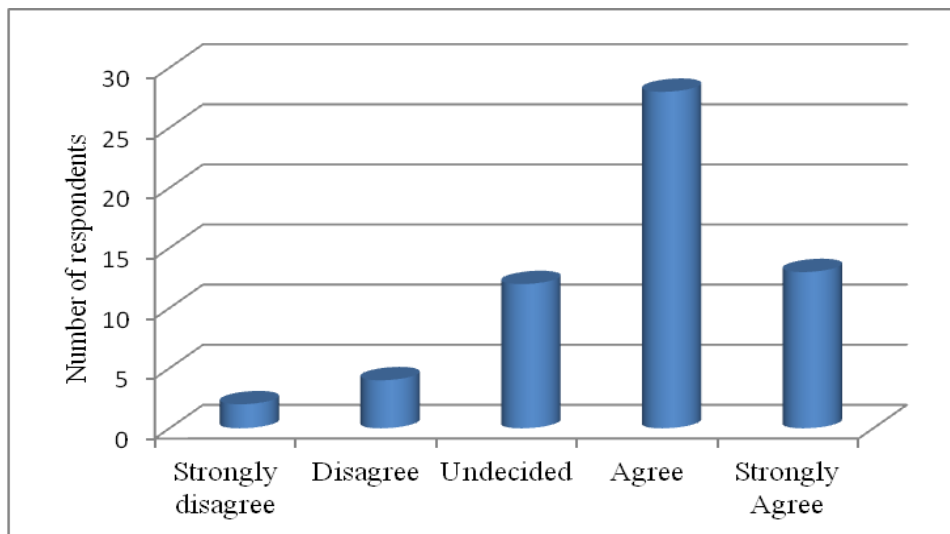
For the purpose of exploring whether the game helped pupils to generalize ideas and draw together various aspects of the course, the following statement was presented: I understood links between the game itself and topics discussed after the game.



**Figure 6.** Frequency distribution of responses to the statement about pupils understanding the links between various aspects of the course (constructed by the author).

These results (see Figure 6) clearly show a strong tendency towards agreement and furthermore strong agreement (~95% altogether). The game helped respondents to see connections between various topics and generalize them into a comprehensive set of knowledge.

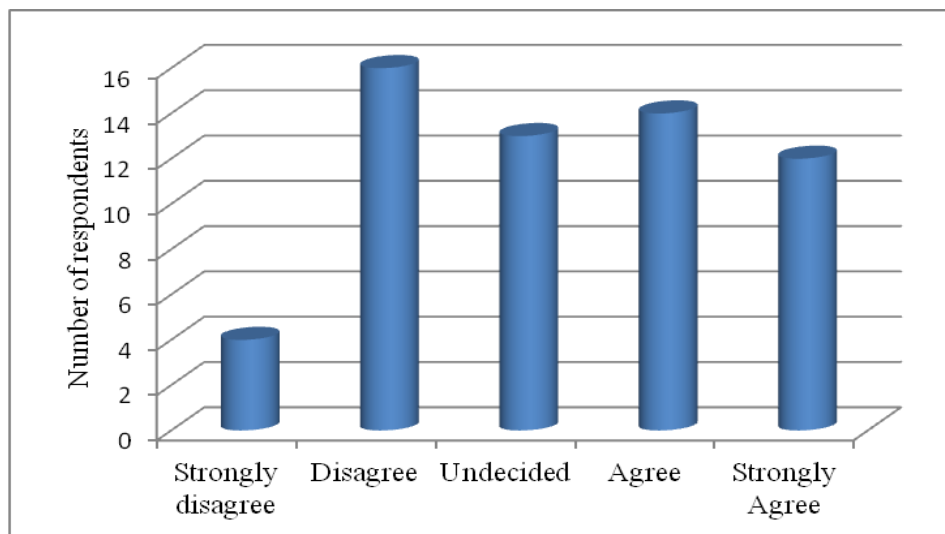
For discovering the possible empathy towards classmates which was induced by the organisation of the class, i.e. playing the game, pupils were asked if they felt responsible for their team's success (see Figure 7).



**Figure 7.** Frequency distribution of responses to the statement about pupils feeling responsible for their team's success (constructed by the author).

A rather large majority of respondents agreed with the statement (~70% altogether). This feeling of empathy is most likely evoked by the need to work in teams and work as coherently as possible in order to succeed.

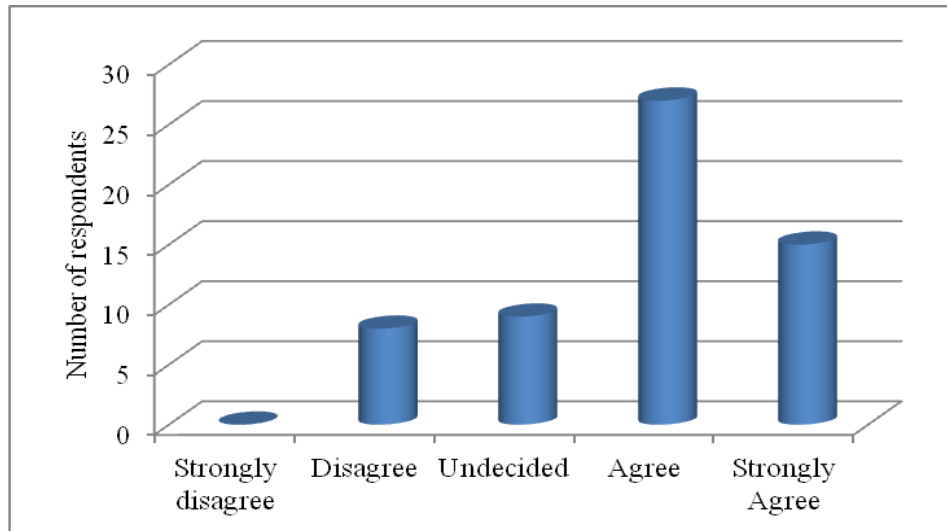
To study further the claim that classroom games might encourage students to look beyond their immediate assumptions and expectations and teaches them to be more critical towards presumptions, the sample group was asked if the overall result of the game was surprising for them.



**Figure 8.** Frequency distribution of responses to the statement about pupils feeling surprised by the overall results of the game (constructed by the author).

As seen from the Figure 8, opinions about this statement were much more various compared to the previous statements. The disagreement was quite a popular answer in this case. Reasons for this kind of attitude may vary. Firstly, pupils might have guessed the idea of the game while playing it. Another possible reason may be that people generally do not like to be tricked or admit that they could not forecast the possible outcomes. Still, there were a lot of those (~44%), who admitted that the results were surprising. The element of surprise was anticipated, because teams did not know that they started the game from very different grounds when it came to the distribution of money and assets until the very end of the game.

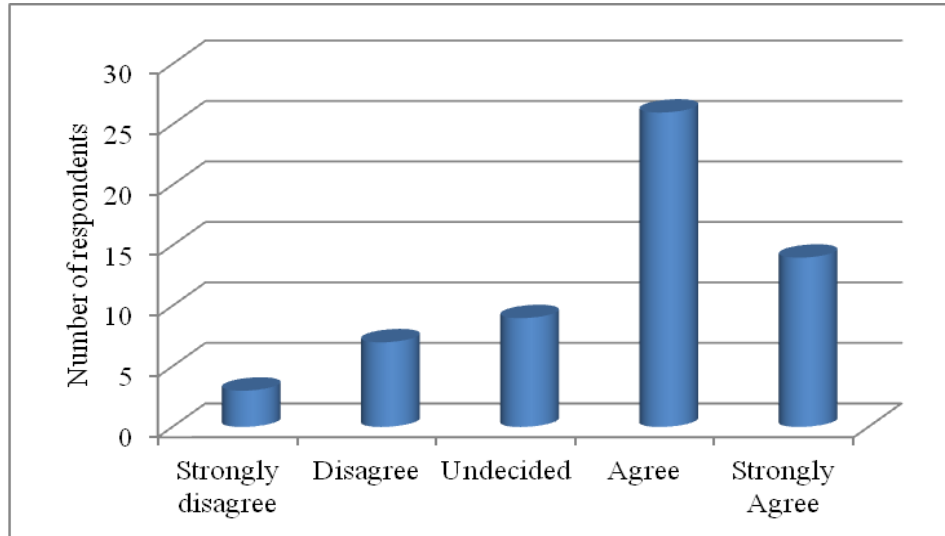
For learning more about the claim that classroom games improve understanding of really complicated and abstract theoretical topics, respondents were asked if the game helped them to understand some of the topics that were discussed later in the debriefing.



**Figure 9.** Frequency distribution of responses to the statement about pupils understanding some theoretical topics better because of the game (constructed by the author).

Again, agreement and strong agreement were clearly the most popular answers (~70 % from all the answers). Only 13 % of respondents did not find the game helpful in the discussion part of the study session and 15% remained undecided. Therefore, it could be said that personal experience gained from the game facilitated comprehension of concepts that are usually perceived as distant or abstract.

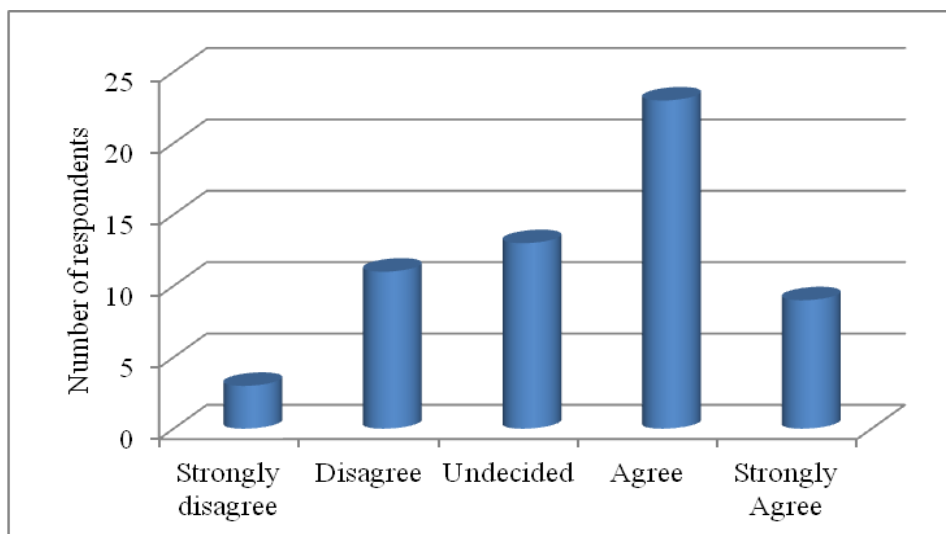
Although the development of a certain skill could not be measured with the current questionnaire, the overall attitude towards being social and communicative was assessed with the following statement: I liked communicating with my classmates during the game.



**Figure 10.** Frequency distribution of responses to the statement about pupils liking to communicate during the game (constructed by the author).

The majority of the respondents (~68%) enjoyed communicating with other classmates. It is quite a predictable result, as usually classroom work is organised by the rule that only one person talks at a time. Pupils who responded with disagreement or even strong disagreement may have different reasons. One of them might be a lack of social skills in general. Also there might be something to do with existing group dynamics or preference of silent class environment.

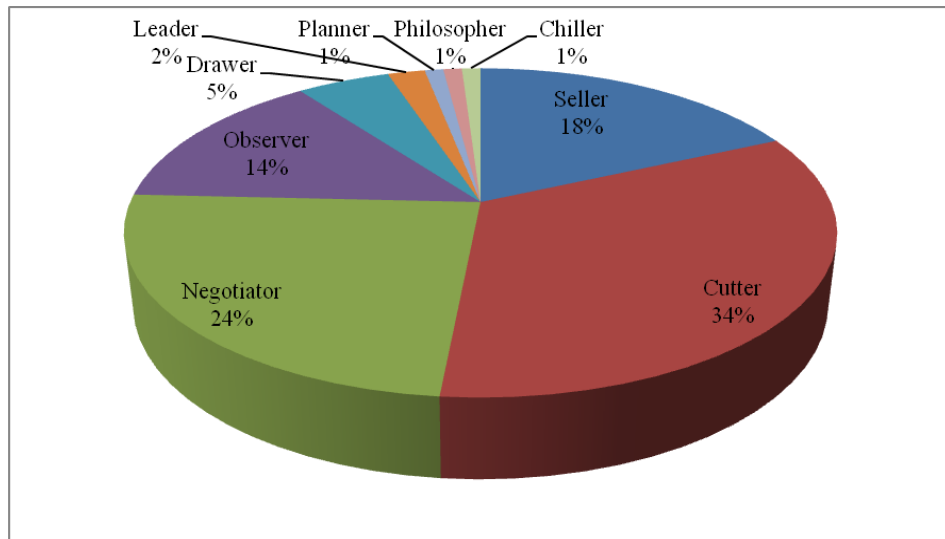
Possibly increased interest and more positive attitude towards economics in general due to the game were studied by asking pupils if they developed a greater interest towards economics and topics discussed because of the game.



**Figure 11.** Frequency distribution of responses to the statement about pupils developing greater interest towards economics due to the game (constructed by the author).

Although quite a big group of respondents (22%) remained undecided, the majority (~55%) admitted to have developed a greater interest towards economics, which is undoubtedly a positive outcome for everybody related to the discipline. About 25% of the respondents disagreed with the statement and there may again be various reasons for doing that. Firstly, the game as a teaching method may not have been attractive enough to change their opinion about the entire discipline. Another possible version may be somewhat psychological. Respondents might not want to admit that their already settled belief about something could have been converted.

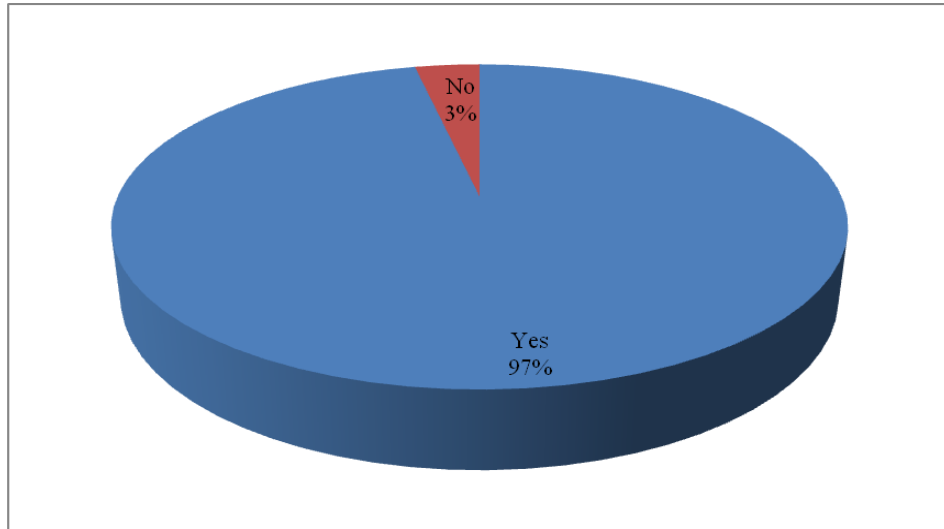
To understand if pupils who participated in a game understood the importance of roles and responsibility accompanied, they were asked to determine their own role during the game.



**Figure 12.** Frequency distribution of reported roles in the game (constructed by the author).

The most popular role during the game turned out to be the cutter of the paper shapes and it is greatly explainable with the high need for production during the game. Although respondents were only presented with four optional answers, some important roles, which include drawer of the shapes, leader and planner, were added by the respondents themselves. Aspects, like added roles and logical outcome of most popular roles, indicate that the division of roles within teams had a great focus and their importance was understood.

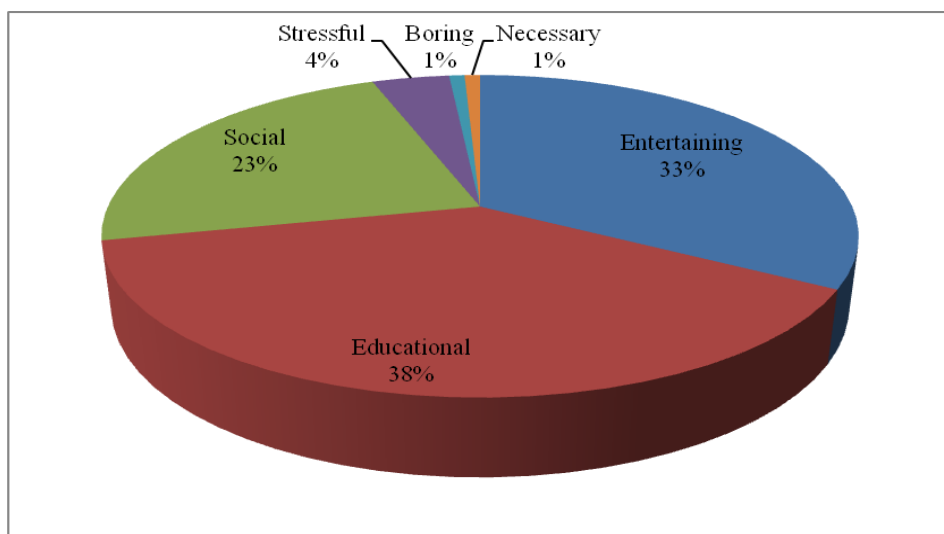
For finding out if pupils thought that the game itself and relevant theories discussed later had any practical relevance, they were asked a simple yes or no question: Do you think you can use knowledge gained from this study session in real life situations?



**Figure 13.** Frequency distribution of responses to the question if the knowledge gained from the study session is relevant in real life (constructed by the author).

As seen from figure 13, a majority of respondents saw the practical relevance of the game and understood why certain economics theories were related to it. This is an essential assumption when actually trying to use theory in practice and benefits both individuals' economic behaviour and the overall reputation of the discipline.

Respondents' attitudes towards the game and playing as a means of learning was determined with a question with optional answers which all represented various features of the game.



**Figure 14.** Frequency distribution of reported features of the game (constructed by the author).

Although the entertainment aspect of the game was quite popular (33%), it was still a bit less popular than the educational attribute. Regardless of the difference, there is a definite threat that this kind of teaching method is not taken seriously by learners. Next to the entertainment and educative feature, the social aspect of the game was strongly perceived by the respondents.

When asked what pupils really liked about the study session, the most popular answer was the game itself, i.e. the unusual organisation of the class. Also, various aspects about the course of the game like negotiating, trading and selling of the shapes were mentioned. Some respondents also managed to generalize their ideas and therefore aspects like strategy planning and seeing the bigger picture stood out from the answers.

On the contrary, when pupils were asked what they liked the least, not too many content-rich answers were received. A majority of respondents said that there was nothing they did not like. A few mentioned the problem with a shortage of time and some were not satisfied with the fact that teams had an uneven set of resources at the beginning of the game.

The last question from the questionnaire was posed in a way that would make respondents really think back and reflect on their experience. This way, respondents could benefit from recalling their actions during the game and also the overall participation enthusiasm could be estimated. When asked what they would do differently playing the same game next time, a lot of different answers were reported. Most popular were better time management, improved communication and well-reasoned overall planning. Among those, a lot of specific actions like selling the compasses or buying less paper were mentioned.

### **2.7.2. Results acquired from the observation**

Results acquired from observation are presented in the following table (see Table 3).

**Table 3.** Results from observation

<p><b>Intended learning outcome</b></p>	<p><b>Was the achievement of intended learning outcome observable?</b></p>	<p><b>Was the intended learning outcome achieved according to observation?</b></p>	<p><b>Reasoning and examples</b></p>
<p>Comprehension of economic concepts of specialisation and division of labour, opportunity cost, supply and demand and the determination of price, the law of comparative advantage, the importance of market power in international trade, and risk and uncertainty</p>	<p>To some extent</p>	<p>N/A</p>	<p>Respondents were asked to discuss these concepts providing examples from their experience gained from the game. For instance, when discussing the division of labour and importance of it, several teams mentioned that there was a division of labour in the team, some people cut out the shapes and some were appointed to negotiate with other teams and traders. They also mentioned that the division could have been more effective if some team members would have concentrated on exploring the surrounding teams and standing in the line for trading transaction.</p>

Intended learning outcome	Was the achievement of intended learning outcome observable?	Was the intended learning outcome achieved according to observation?	Reasoning and examples
Ability to generalise and create association	No	N/A	This learning outcome is largely connected with pupils' previous knowledge and since pupils' set of knowledge was not measured/studied before the game, no conclusive statements can be made about achieving the ability to generalize and create association
A sense of empathy	Yes	Yes	Empathy was registered both within teams and in between teams. People responsible for production were supported by other team members for instance by "protecting" them from players, who interrupted the production process by asking to trade tools or resources, or even trying to steal the assets. Appointed roles were taken seriously, which indicated the comprehension of teamwork as an important success factor. Also, after discovering that there was an unequal division of resources, cases of good will were registered. Poor teams were provided with essential production tools with low price or free of charge.
Critical thinking	Yes	Yes	Teams represented different income levels and did not know about it during the game. It was a means for developing critical thinking and being cautious about presumption. As it turned out, a lot of respondents did notice that teams were given a different set of resources at the beginning, but they did not make any assumptions about it. When different income levels were announced and explained, pupils were somewhat surprised and enlightened at the same time.

Intended learning outcome	Was the achievement of intended learning outcome observable?	Was the intended learning outcome achieved according to observation?	Reasoning and examples
A capability to comprehend abstract concepts	To some extent	Yes	The concept of opportunity cost was discussed during debriefing by asking pupils to explain their production decisions. Why they chose to produce certain shapes and which were the next best choices. On the basis of that the opportunity cost was explained as a cost of not being able to enjoy the production value of those next best choices, i.e. not producing different kinds of shapes. Pupils seemed to understand the abstract concept of opportunity cost when parallels between the production during the game and discussion were drawn.
Good communication skills	Yes	Yes	One important aspect of the game was communication. Buying, selling, dealing, bargaining and negotiating were all incorporated in the game. The majority of players started to mingle around the classroom within first 15 minutes of the game.
Interest towards study material and subject	Yes	Yes	Interest towards economics and study materials was measured with pupils' overall attraction towards the game. It could be said that the game was enthralling for pupils because they were raising their voices while communicating, running in class to save valuable time and expressing strong emotions when successful or not. In contrast, during debriefing pupils settled down and were really focused and eager to listen about the results and discussion.

Intended learning outcome	Was the achievement of intended learning outcome observable?	Was the intended learning outcome achieved according to observation?	Reasoning and examples
Appreciation towards role and responsibility.	Yes	Yes	Roles occurred both naturally and intentionally and were not changed during the game. For example, pupils who were responsible for negotiating and trading also participated in auctions to get an overview of other teams' resources. Those responsible for production were extra careful when drawing and cutting the shapes because, for successful trading processes, a precision was required.
The ability to understand the practical relevance of economic concepts	Yes	No	During debriefing, quite a lot of respondents reported not having seen the connection between the game and real life. Reasons like restricted time and not enough information were given as examples of why the game did not reflect real life. Therefore, it could be said that pupils did understand the restricted nature of resources like time and information as economical concepts that definitely influence economical decisions in real life situations.

Source: constructed by the author.

## 2.8. Discussion

The majority of respondents reported to have achieved most of the intended learning outcomes. These included the ability to generalise and create associations, a sense of empathy, capability to comprehend abstract concepts, good communication skills, interest towards study material and subject, appreciation towards role and responsibility, and an ability to understand the practical relevance of economic concepts. Furthermore, the only learning outcome that was presented in the self-assessment instrument (the questionnaire), and was not achieved according to respondents, was critical thinking. One intended learning outcome that was not measured with self-assessment was comprehension of economic concepts of specialisation and division of labour, opportunity cost, supply and demand and the determination of price, the law of comparative advantage, the importance of market power in international trade, and risk and uncertainty. Therefore, it is not possible to make any conclusions of the achievement of that learning outcome on the basis of respondents' answers.

Pupils also seemed to have quite a positive attitude towards the game, especially due to the unconventional organisation of class. Furthermore, the only unlikeable aspect of the game was reported to be a restricted playing time. Also, the game was enthralling enough to encourage pupils to want to improve their course of play in the next hypothetical game.

According to observation, intended learning outcomes like a sense of empathy, critical thinking, capability to comprehend abstract concepts, good communication skills, interest towards study material and subject, and appreciation towards role and responsibility were achieved. The observation did not support the achievement of ability to understand the practical relevance of economic concepts. During observation it was not possible to evaluate pupils' ability to generalise and create associations, due to not having any information about their previous set of knowledge.

When comparing two sources of data and results, some differences should be discussed. Firstly, there was a difference between pupils' and observer's evaluation of developing

critical thinking as one of the intended learning outcomes. This difference may most likely be a result of weak question formulation. When the researcher thought about the presumptions being made due to the design of the game (the reason for the unequal set of resources), then pupils might have considered the surprising aspect to be something else.

Another difference occurs when comparing the achievement of developing an ability to understand the practical relevance of economic concepts. Although pupils reported having seen the parallel between the game and real life situations, it did not meet the observer's eye. Furthermore, the aspects of the game that pupils thought were not applicable to real life situations during debriefing were not even so economics related or theoretical in their nature. These included for example restricted time and information asymmetry. This indicates the threat of classroom games as a teaching method being perceived as just a fun alternative when not carefully planned and constructively aligned.

Despite the differences, it can be claimed that the majority of the results gained from different sources, which assure the achievement of intended learning outcomes like sense of empathy, capability to comprehend abstract concepts, good communication skills, interest towards study material and economics, and appreciation towards role and responsibility, are complementary. Therefore, the trustworthiness of the study is validated by triangulation of data.

### **2.8.1. Limitations**

The main limitation of the current study is not focusing on the assessment methods, which play an important role in the constructive alignment model. It is because the researcher chose the study focus to be on a specific teaching method and appropriate learning activities. Additional assessment instruments would have shifted the focus of the study and resulted in more complex research questions.

The assessment methods used, self-assessment and observation, were not sufficient for finding out how well were the economics related learning outcomes, i.e. comprehension

of economic concepts of specialisation and division of labour, opportunity cost, supply and demand and the determination of price, the law of comparative advantage, the importance of market power in international trade, and risk and uncertainty, achieved. For that additional assessment methods should have been included in the constructive alignment model.

### **2.8.2. Implications for teaching economics by using classroom game**

After discussing the results obtained from case study research, some practical suggestions are now given relying on the researcher's experience of carrying out the classroom game for this study. In addition, an opinion on the method was asked from field expert Eve Kikas, a professor in Tallinn University's Institute of Psychology from 2008. Her research fields incorporate the influence of school education on the development of thinking, development of everyday synthetic and scientific concepts, children's abilities and motivation and their relations with knowledge and skills, teachers' teaching practices and their influence on children's development, children with special needs, children's abilities and their assessment, applications of school psychology in Estonia.

One concerning factor of implementing classroom games in economics class is the pupils' attitude towards studying while playing. There is a threat that the study session may be perceived just as a nice alternation and is therefore not taken seriously. This was also a concern for the field expert Eve Kikas (2014). She mentioned that playing induces strong emotions and desire to win, which both contradict the process of learning. To overcome the threat that the study session becomes too entertaining and fun, firstly, the debriefing has to be well-structured and thought-through. A very clear and reasoned set of economic topics have to be presented and discussed after the game. Although the game, used as an example in this study, consisted of two equal length periods (45 minutes for game and 45 minutes for debriefing) it would probably be wise to lengthen the period of discussion even more.

As well as carefully planning the debriefing, it would be advisable, deriving from previous study and Kikas's proposal, to ask for written feedback on the economic topics

discussed. It should be done, for example, a week after the game to make sure that all the interfering emotions have been cooled down. Cartwright and Stepanova (2012: 55) claim that students did significantly better at answering a test question based on a classroom game if they had written a report on that game. A written report could also be considered as one of the additional assessment methods.

Kikas also stressed that economic classroom games and experiments should probably not be applied very frequently. Otherwise, they would lose attractiveness and the main reason why they would be so beneficial in the first place: novelty and an ability to excite.

The biggest obstacle for classroom games and experiments to raise popularity among economics teachers seems to be the access to relevant games and experiments. Designing a game itself is time-consuming and complicated, but definitely also a rewarding act, as is conducting textbooks or other study materials. Another option is to locate already existing games and simply translate and amend them to certain needs. There are different games and experiments available around the world in various disciplines, and economics is no different (see Table 4).

**Table 4.** Examples of classroom games and experiment designed to teach various economical topics

<b>Topic</b>	<b>Level</b>	<b>Authors and the name of the publication</b>	<b>Source and publishing year</b>
The role of banks as financial intermediaries. The extended version includes the effect of political risk on credit markets	principles, intermediate	Mary Mathewes Kassis, Denise Hazlett, and Jolanda E. Ygosse Battisti „A Classroom experiment on Banking“	The Journal of Economic Education, 43(2), 200–214, 2012
The hold-up problem, perfect equilibrium and the problem of making non-binding commitments	intermediate	Dieter Balkenborg and Todd R Kaplan and Tim Miller „A simple economic teaching experiment on the hold-up problem“	MPRA Paper No. 24772, 2010

<b>Topic</b>	<b>Level</b>	<b>Authors and the name of the publication</b>	<b>Source and publishing year</b>
The idea of two-sided matching, the concept of a stable assignment, and the Gale-Shapley deferred acceptance mechanism.	principles	Carl T. Bergstrom, Theodore C. Bergstrom, Rodney J. Garratt „Choosing Partners: A Classroom Experiment“	Journal of Economic Education. Vol. 44 Issue 1, p 47-57, 11p, 2013
Efficient capital markets, information aggregation, trading	principles	Andreas Park „Experiential Learning of the Efficient Market Hypothesis: Two Trading Games“	The Journal of Economic Education, 41(4), 353–369, 2010
Environmental externality, polluting good, production possibility frontier, trade-offs	principles	Nancy Carson, Panagiotis Tsigaris „Illustrating Environmental Issues by Using the Production-Possibility Frontier: A Classroom Experiment“	The Journal of Economic Education, 42(3), 243–254, 2011
Advertising, monopolist, industrial organization	principles	Beth A. Freeborn, Jason P. Hulbert „Persuasive and Informative Advertising: A Classroom Experiment“	The Journal of Economic Education, 42(1), 51–59, 2011
Patent infringement and invalidation, patents breadth, risk and uncertainty	principles	John C. Bernard, Amalia Yiannaka „Understanding Patenting Decisions: A Classroom Exercise“	The Journal of Economic Education, 41(3), 235–251, 2010

Source: Constructed by the author.

As seen from the table above the amplitude of various economic topics that can be discussed in the form of games and experiments is wide, varying from macro-economic theories to advertising and environmental issues.

## **CONCLUSION**

Deriving from pedagogical theories and the current situation both in the Estonian education in general and more specifically in economics classes, there is a crucial need for not only acknowledging the constructive learning approach, but also implementing it. Constructive learning approach is a mean for pursuing towards sustainable society, where every individual is independently able to not only react to the environmental stimuli, but also act accordingly. This expands also on the volatile economic environment. Using constructive approach when educating learners on economics means supporting the development of future economic agents and their competence of making important economic decisions.

A case study research helped author to illustrate how exactly constructive learning approach improves the quality of the learning and helps to achieve intended learning outcomes in the economic class. The results gained from both questionnaire and observation describe how classroom games, with all the learning activities they encourage, enhance the learning environment in economics class by providing a learner-centered approach and inducing a deep approach towards learning. In addition, the current study shows how constructive alignment model enhances clarity and transparency in the design of any class. Therefore, it helps to create a learning environment where learners understand not only what they are learning, but also why they are learning.

As a result to this case study, pupils reported having developed a sense of empathy, a capability to comprehend abstract concepts, good communication skills, interest towards study material and subject, and appreciation towards role and responsibility. Moreover, all of these learning outcomes were also achieved according to observation. As seen from the results, all of the intended learning outcomes achieved according to both questionnaire and observation, are generic in their nature. It can therefore be said

that classroom games as a teaching method is particularly beneficial when supporting the development of transferable skills. Furthermore, as the concepts implies, these skills are transferable, which means they can be utilized not only in economic situations, but also in other fields of life.

Since the current research did not focus on assessment methods, no trustworthy conclusions can actually be made about achieving the economics-related learning outcomes, which in this case were formulated as comprehension of economic concepts of specialisation and division of labour, opportunity cost, supply and demand and the determination of price, the law of comparative advantage, the importance of market power in international trade, and risk and uncertainty. To study the achievement of subject-related of learning outcomes, additional assessment methods should be included in future research.

Future research on this topic could also aspire for more complex case study design, which would enable researchers to compare different sample groups, study cause and effect relations, or to gather data over time. Furthermore, different teaching and assessment methods applicable to economics class should be compared and described using constructive alignment model to provide an in-depth understanding of why constructive approach to learning is so sufficient. But even more important than studying the constructivstic learning approach and its features from different angles, it is important to start implementing it in practice. Not only in economics class, but also in other subjects.

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# Appendix 1. Feedback questionnaire

## Playsome economics: Classroom experiments and games in the economics curricula

Pupils' feedback questionnaire

Researcher: Eva Roosaar

Please take some time to fill in the following questionnaire. All the answers are anonymous and will be used for research purposes only.

### 1. Please mark the box with suitable answer to the statements!

1.1 I used knowledge gained from previous economics courses during the game.

<input type="checkbox"/> strongly disagree	<input type="checkbox"/> disagree	<input type="checkbox"/> cannot answer	<input type="checkbox"/> agree	<input type="checkbox"/> strongly agree
--	-----------------------------------	--	--------------------------------	---

1.2 I understood links between the game itself and topics discussed after the game.

<input type="checkbox"/> strongly disagree	<input type="checkbox"/> disagree	<input type="checkbox"/> cannot answer	<input type="checkbox"/> agree	<input type="checkbox"/> strongly agree
--	-----------------------------------	--	--------------------------------	---

1.3 I felt responsible for my team's success.

<input type="checkbox"/> strongly disagree	<input type="checkbox"/> disagree	<input type="checkbox"/> cannot answer	<input type="checkbox"/> agree	<input type="checkbox"/> strongly agree
--	-----------------------------------	--	--------------------------------	---

1.4 The overall result of the game was surprising for me.

<input type="checkbox"/> strongly disagree	<input type="checkbox"/> disagree	<input type="checkbox"/> cannot answer	<input type="checkbox"/> agree	<input type="checkbox"/> strongly agree
--	-----------------------------------	--	--------------------------------	---

1.5. The game helped me to understand some of the topics that were discussed later during debriefing.

<input type="checkbox"/> strongly disagree	<input type="checkbox"/> disagree	<input type="checkbox"/> cannot answer	<input type="checkbox"/> agree	<input type="checkbox"/> strongly agree
--	-----------------------------------	--	--------------------------------	---

1.6 I liked communicating with my classmates during the game.

<input type="checkbox"/> strongly disagree	<input type="checkbox"/> disagree	<input type="checkbox"/> cannot answer	<input type="checkbox"/> agree	<input type="checkbox"/> strongly agree
--	-----------------------------------	--	--------------------------------	---

1.7 I developed a greater interest in economics and topics discussed because of the game.

<input type="checkbox"/> strongly disagree	<input type="checkbox"/> disagree	<input type="checkbox"/> cannot answer	<input type="checkbox"/> agree	<input type="checkbox"/> strongly agree
--	-----------------------------------	--	--------------------------------	---

## Appendix 1 extension

### 2. Please choose the most suitable answers for the following questions!

2.1 What role did you have in your team (you can choose more than one answer)?

Manufacturer of shapes

Seller of shapes

Negotiator

Observer of other teams

Other: \_\_\_\_\_ (write a role that is not mentioned in the options above)

2.2 Do you think you can use knowledge gained from this study session in real life situations?

Yes

No

2.3 How would you describe this experience in general (choose 2 answers at most)?

Entertaining (fun)

Educative (gained new knowledge)

Social (time well spent with classmates)

Boring (time wasted)

Other: \_\_\_\_\_ (write an adjective that is not mentioned in the options above)

### 3. Please answer the following questions:

3.1 What part(s) of the study session did you like the best?

3.2 Was there something in the organisation of the study session that you did not like at all?

3.3 If you could play the game again, what would you do differently?

**Thank you for your time! Hope you had fun!**

## RESÜMEE

### KONSTRUKTIIVSELT SIDUS MAJANDUSE TUND: OODATUD ÕPIVÄLJUNDITE SAAVUTAMINE KLASSIRUUMI MÄNGU ABIL

Eva Roosaar

Eesti haridussüsteemis, sh majanduse õpetamises, on siiani domineerimas traditsiooniline õpikäsitlus, st õppekeskkond on õpetajakeskne ning õppeprotsess koosneb peaaesjalikult teadmiste ülekandmisest õpetajalt õpilasele. Eesti elukestva õppe strateegia 2020 (The Estonian Lifelong...2014) toetab aga uut, konstruktivistlikku õpikäsitlust, mis peab silmas iga õppija individuaalset ja sotsiaalset arengut, õpioskusi, loovust ja ettevõtlikkust. Rõhutades individuaalsust ja lubades õpilastel ise konstrueerida teadmisi, püüdleme ühiskonna poole, mille liikmed on iseseisvalt toimetulevad ja riik tervikuna jätkusuutlik. Sellest tulenevalt peaksid ka majandustunnid arendama eelkõige selliseid oskusi, mis aitavad indiviidil majanduslike probleeme mõista ja lahendada, ning mitte niivõrd rõhuma nähtuste õige nimetamise oskusele.

Antud magistritöö eesmärk on, lisaks konstruktivistliku õpikäsitluse tutvustamisele majanduse õpetamise kontekstis, kirjeldada üht kindlat õppemeetodit, klassiruumi mängud, ja selle kasutamise võimalust majandustunnis konkreetse näite põhjal. Seega püüab autor kasutada kasvatusteaduslikku teooriat selgitamiseks, kuidas konstruktivselt sidus klassiruumimäng aitab õpilastel majandustunnis jõuda oodatud õpiväljunditeni. Läbiviidud juhtumianalüüs kätkeb endas nii õpilaste enda hinnanguid kui ka vaatleja seisukohti õpiväljundite saavutamise kohta.

Läbiviidud uurimuse tulemusena selgus, et uuringus osalenud õpilased saavutasid majandustunnis klassiruumimängu tulemusena järgnevad õpiväljundid: empaatia tunne, võime hoomata abstraktseid ideid, hea suhtlemisoskus, huvi õppematerjalide ja

õppeaine vastu ning lugupidamine rollide ja vastutunde suhtes. Tegu on ülekantavate oskustega, mis tähendab nende kasutamine ei ole piiratud vaid majanduslike nähtustega, vaid need on üldised ja ülekantavad erinevatesse eluvaldkondadesse. Kahjuks ei võimaldanud uuringu disain ja kindel uurimisfookus välja selgitada kas klassiruumimäng aitas õpilastel jõuda ka majandusteadusega seotud õpiväljundite saavutamiseni, kuid see võiks olla eesmärgiks järgnevate samasisuliste uuringute koostamisel.

Tehtud uurimistöö tulemusena võib väita, et konstruktivistliku õpikäsitluse rakendamine on nii haridussüsteemis üldiselt, kui ka spetsiifilisemalt majandusteaduse õpetamisel, võtmetähtsusega. Majanduskeskkonnas, mis on pidevas muutumises, on oluline harida tulevasi majandusagente tulema iseseisvalt toime majanduslike probleemide mõistmise ja lahendamisega.

## **Lihtlitsents lõputöö reprodutseerimiseks ja lõputöö üldsusele kättesaadavaks tegemiseks**

Mina, Eva Roosaar,

1. annan Tartu Ülikoolile tasuta loa (lihtlitsentsi) enda loodud teose

„Constructevly aligned economics class: achieving intended learning outcomes by using classroom game“,

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Tartus, **15.05.2015**