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The Experience of Teachers in the Application of *ActivInspire* Interactive Evaluation System in Classroom: A Case of Teachers in Lithuania

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Abstract. New technologies are evidently gaining access to daily school life. Considering new challenges, the educators search for new ways to update educational content in the 21st Century when learning paradigms are changing. Soon, the new technological tools and solutions become predominant and change the traditional approach to teaching and learning. The new technologies not only help the educators to provide the relevant educational content in an easier and diverse way, but also to organise the evaluation of the results. This is particularly important for the educational process, taking into account the relevant issues of the period.

The article presents results of a survey. Participants of the survey were teachers who use the *ActivInspire* interactive evaluation system in their lessons. These teachers were the first to use this system in Lithuania. No studies on the experience in the use of the interactive evaluation system in Lithuania have been carried out before. During a school year, the teachers were writing reflections about their experience in using the interactive teaching tools in lessons: interactive whiteboard, electronic textbooks and the audience response system. Generally, the teachers had a positive opinion about the use of the interactive evaluation system in classroom. The teachers emphasized in particular the aspect of usefulness of the audience response system. In addition to the aspect of usefulness, other aspects marked by the teachers as important were those of attractiveness, time management and impact on learning. This experience of teachers in Lithuania in using the *ActivInspire* evaluation system in classroom is similar to the experience of teachers in other countries.

Keywords: *ActivInspire*, information and communication technology, interactive evaluation system, audience response system.

Introduction

New technologies are evidently gaining access to daily school life. The scientific literature shows that with the introduction of the Internet, a new era starts (McCrindle

and Wolfinger, 2010). Considering new challenges, the educators search for new ways to update educational content in the 21st Century, when learning paradigms are changing. The new technological tools and solutions become predominant and change the traditional approach to teaching and learning in terms of educational content, in that it assumes new forms, (e.g. electronic content) as well as a new selection of forms and application of methods). The application of Information and Communication Technologies (ICT) tools in all areas of human life is spreading particularly fast. The terms "digital native" and "digital immigrant" (Prensky, 2009; Thomas, 2011), used both in everyday life and scientific literature, marks the particular challenge for educational science. Students are not interested in learning by only looking at information written with chalk on traditional blackboard or reading the texts printed in textbooks. Students of the new digital generation need images and various technological interactions. As a result, teaching and learning are gradually becoming unimaginable without the latest technologies and proper application thereof.

On the other hand, it should be stated that new technologies help the educators to not only provide the educational content in easier and diversified ways, but also considering the relevant issues of the period, to organize the evaluation which is particularly important for the educational process. Evaluation takes a special place in educational sciences. According to Weis (2006), as soon as his *Evaluation Research* (1972) was published, evaluation immediately became a new field of research. Currently, evaluation is analyzed in various aspects. A variety of methods and forms of evaluation put the educator in a delicate position. However, as Indrašienė and Žibėnienė (2014) note an evaluation must have a clear purpose because a method or form appropriate in one situation may be completely improper or even faulty in another situation.

It is generally agreed that evaluation should be based on the modern concept of learning which encompasses both psychological peculiarities of student ages, and students' individual needs, besides a compliance of these two factors with clear educational goals. Evaluation should provide impartial well-founded feedback to both student and teacher, which would benefit both in the making of the most objective decisions. In this field of evaluation, ICT producers (e.g. *Samsung, Apple, Promethean*, etc.) provide their suggestions on how to harmonize these two aspects.

According to Buil *et al.* (2016), although various digital technologies have been lately applied to evaluation, objective evaluation of applied tools lacks research. When analyzing products related to the areas of new technologies into the educational process, Dudaitė and Prakapas (2016a, 2016b) indicate that it is not a simple direct import of specific products from English speaking environment to the Lithuanian speaking environment. In fact, Lithuania's general education schools were offered a product with "active content". However, in Lithuania little research is carried out on how new technological solutions are applied in teaching practice, and on the experience of teachers related to the solutions in daily activity. Dudaitė and Prakapas (2016a, 2016b) reveal in the scientific literature that the peculiarities of application of these new technologies in respect of teacher experience and lesson structure, yet one particular component of educational process – evaluation – has not been studied.

This article focuses on exposing and analyzing the experience of Lithuania's school teachers in organizing an educational activity in a classroom by using the student evaluation system installed in *ActivInspire* system, namely: the interactive whiteboard and the audience response system. Similar studies have been carried out at a global level, yet most studies are related with the use of audience response system in higher education, while little research on the use of the system in primary and secondary schools has been published (Barth-Cohen *et al.*, 2016). Thus far, this article focuses on the following questions:

1. What is the experience of teachers in Lithuania in using *ActivInspire* evaluation system in classroom?
2. To what extent is experience of teachers in Lithuania who use *ActivInspire* evaluation system in the classroom similar to the experience of teachers of other countries who use this system?

Thus far, the purpose of the research is to summarize one school year's teaching experience of teachers who use *ActivInspire* interactive evaluation system in the classroom.

Organization and methods of the research. The research applied a case study strategy (Yin, 2014) with the aim of summarizing the experience of a specific region (i.e. Lithuania) in launching new educational technologies in the educational process. The research started in the 2013–2014 school year. Teachers using the *ActivInspire* interactive whiteboard for teaching mathematics and science at the fifth level participated in the survey. Various methods of survey data collection and analysis were used for the research including: scientific literature analysis, qualitative content analysis, and hierarchical trees. Teachers' reflections about their experience in using interactive teaching tools in the classroom was applied as a data collection instrument. *QDA Miner4* and *Excel* programs were used for carrying out categorization. The *Visio* program was used or drawing subcategories trees. The survey was carried out in accordance with the main principles of research ethics (Miller *et al.*, 2012). In that light, all participants of the survey participated in the survey on a voluntary basis. The survey purpose, potential risks, participants' rights (e.g. possibility to stop participation in the survey) were explained to the survey participants, and their consent was sought and received. During the survey, principle of confidentiality was upheld: the reflections provided by the survey participants were used only by the researchers. In addition, the results of the survey material are provided only in a summarized form and in such a manner that the survey report would not reveal the identity of the participants thus ensuring confidentiality. Finally, after the survey, the summarized survey material was shared with the participants.

1. The *ActivInspire* Interactive Evaluation System

Evaluation is a special part of the teaching and learning process. According to Petty (2007), studies prove that feedback has much more influence on students' results than

any other factor, hence its critical importance. Scientific and didactic literature provides at least three levels and forms of evaluation: diagnostic, formative and general. With the transformation of the educational paradigm, the concept and functions of evaluation also change. The consistent transition from evaluation as a final outcome measure to the evaluation of students' participation in the educational process has been acknowledged. Greater emphasis is placed on the fact that evaluation is a constant process which is oriented towards students' progress.

Today there is no doubt that the evaluation system must be integrated and interpretative, following in much the same way as the learning process itself is. According to research by Čiužas and Navickaitė (2008), it can be stated that the essence of evaluation based on interaction paradigm is the kind of feedback resulting from it. Evaluation should be carried out in a specific context: during the evaluation, the interactive interaction between students and teacher should take place. The evaluation must motivate students to study. According to the learning paradigm, evaluation is an integral part of the learning and teaching process.

It is in the above context that five years ago the *viesa* Publishing House, grounded in a long-standing experience in the publishing of educational literature, and obviously in view of the foreseen technological environment of schools in Lithuania, offered the schools a product of the internationally recognized *Promethean* company, *ActivInspire*. It is noteworthy for this research, that this product is not directly exported from the English speaking environment to Lithuanian. In other words, Lithuania's general education schools were offered a product with digital contextual educational content (*Interaktyvios pamokos*, 2017).

According to Juškienė (2011), interactive system solutions of *Promethean* are technical tools for bringing the educational process to a higher level. By immediately using the newest technologies, active participation tools and the Internet applications, as well as video materials, traditional educational methods are applied in a compelling and modern manner. The methodological publication *Learner Response Systems* (2010) which presents *ActivInspire* system proposes that the *Promethean* active teaching class is comprehensive, covering the areas of interactivity, cooperation, and multimedia technologies. These features allow for engaging all students in the learning process and for exciting their imagination, and it serves for creating the digital environment to which contemporary students are well accustomed. All this is particularly important in order to individualize the learning process. Likewise, recent studies (Buil *et al.*, 2016) demonstrate that the use of technologies in the learning process, in particular for evaluation and self-assessment, is primarily connected with an increase in learning motivation for students. Every new technology included in the learning process changes the otherwise relatively boring learning into playful activity. However, it should be stated that this is more like an extrinsic stimulation of motivation for students, and it is not clear whether it will become an intrinsic motivational factor.

Generally, according to producers of technological tools and software, such technologies with specially adapted material are useful for a number of functions. They help the teachers to integrate digital technologies into the educational process. In addition,

they widen possibilities of digital demonstration and modelling. Further, they improve communication between teachers and class during the lesson. They shorten the teacher's time of preparation for lessons. They increase learning speed and depth for students, and finally, they widen teacher's didactic methods (Juškienė, 2011). These are just a few features of the software as presented on the market.

It is further proposed that technological tools and software for evaluation are equally important. The electronic evaluation system is developed for recording the feedback and subsequent related pedagogical diagnostics (Learner Response Systems, 2010). Evaluation is organized by using two devices (*ActivVote* and *ActivExpression2*), which are programmatically adjusted to the *Promethean* product *ActivInspire*. When developing an evaluation system, the producers of *ActivInspire* primarily based this system on technological solutions. In this context of the application of educational technologies, the evaluation system covers both the specific audience response system and the related software (Activremote: Quick Start Guide, 2009). In a technical respect, the products are designed in such a way that they are easily managed by both students at the primary education stage, and those of gymnasiums. The audience response system allows teachers to carry out surveys and instantly receive information about the performance of tasks, students' results, etc. Another particularly important feature of this system in the context of education is that it allows monitoring and estimating students' progress and implementing the main tasks of pedagogical diagnostics.

Yet another feature related to the products of evaluation system (*ActivVote* and *ActivExpression2*) developed by *ActivInspire* producers is that, in the pedagogical process, it is usually difficult for teachers to record everything on time and precisely, and later to analyse it all. Therefore, in the educational process, it is important to directly and actually see the results received during the surveys on the interactive whiteboard, without prejudice to the fundamental ethical principles, and to save the received results in tables in *Microsoft Excel* format whenever necessary. Direct and instant provision of impersonal results on the interactive whiteboard creates preconditions for continuation of the educational process, and it encourages students to discuss and actively participate in lessons, which is one of the purposes of education. And so the *Promethean* company presents many virtues of *ActivInspire* system. Studies carried out by scientists of various countries confirm that the system brings great benefits to students and teachers. As regards objective defects of the system, there was no literature found.

The results of studies recently published in the scientific literature show that audience response system used for students' evaluation and self-assessment of tasks performed improves the involvement of students in the learning process, and strengthens their motivation to study (Farag *et al.*, 2015). Moreover, it was noticed that focused application of technological solutions in the educational process not only encourages the students to participate in answering the questions (i.e. voting) more actively but also creates good preconditions which encourage cooperation between students (Barth-Cohen *et al.*, 2016).

Studies carried out in different countries show that use of audience response system in lessons becomes more popular with more time and use. For example, the USA case presented by Yu and Chang (2014) shows that although we cannot unambiguously say whether the use of the audience response system for learning improved the results in the English language, yet the application of new technologies in addition to traditional teaching methods creates preconditions for the achievement of better results. A certain connection with higher metacognitive capacity can also be observed here. The survey data of Lockard and Metcalf (2015) establishes that the audience response system, which is widely used in various fields, in math lessons, is mostly used for learning basics of mathematics, statistics, calculation, and arithmetic, although it can be successfully applied in learning differential equations as well. Similar results were received during the survey carried out in Lithuania (Dudaitė and Prakapas, 2016b).

Although various digital technologies have been actively used for evaluation in recent years, yet according to Buil *et al.* (2016), objective assessment of applied tools lacks the research.

2. Survey Methodology

Organization of the survey. The survey was carried out in general education schools where the *ActivInspire* interactive whiteboard is used in classrooms. The schools in the survey participated in the project during which *ActivInspire* interactive whiteboards were installed. Ten schools of different types located in different areas participated in the project. Participation was on a voluntary basis. During the implementation of the project and the survey, these were the first and only schools in Lithuania where *ActivInspire* system had been launched. During the survey, there were no other similar technological solutions implemented in schools in Lithuania.

Teachers who were using the *ActivInspire* interactive whiteboard for teaching mathematics and science to the fifth level were invited to participate in the survey. The selection of the subjects and class was based on the electronic educational content which existed at the time of the survey, considering that electronic textbooks for the *ActiveInspire* interactive whiteboard were available only for the lessons of mathematics and science at the fifth level.

The duration of the survey was one school year. During the school year, the teachers were writing reflections about their experience in using the *ActivInspire* interactive teaching tools in lessons, i.e. using the interactive whiteboard, electronic textbooks, and the audience response system. Thus the reflections were written from September to May inclusive (except January and February), once a week, in a free format describing the experience in working with the interactive teaching tools. Those reflections were applied as a data collection instrument.

Data analysis methods and tools. The qualitative content analysis method was used for the analysis of teachers' reflections by distinguishing hierarchical categories and subcategories. The inductive analysis principle was applied: texts of the teachers' reflections were repeatedly read, and from them categories were distinguished which

were subsequently generalized into larger categories. Four levels of hierarchical tree categories were distinguished. Data was analysed at the group level because, based on the survey purpose, it was important to analyse the experience of teachers as a group rather than analyse the individual and her unique experience. Data was analysed according to the intersubjectivity principle with the aim of reaching higher objectivity: in the first stage, the survey authors analysed the data independently and, in the second stage, they compared the data and provided overall results. All the while, *QDA Miner4* and *Excel* software were used for data processing and creation of categories and subcategories. Also, *Visio* software was used for drawing of the hierarchical tree.

Survey sample. Texts of reflections of 3 teachers of mathematics and 3 teachers of science written over the school year were used for survey analysis. At the beginning of the school year, twenty teachers were selected for the survey, yet only six of them wrote reflections until the end of the school year. The rest of the teachers stopped writing reflections in the second half of the year. The main reason was the lack of time for writing reflections. Some teachers indicated the reduced motivation to record their experience in detail. Some teachers fell ill and were absent for a few weeks, and they did not want to carry on writing reflections when they came back. Teachers aged 30–49 and having sufficient skills of using information communication tools were selected for the survey. All survey participants were females because there were no male teachers teaching mathematics and science at the fifth classes in schools participating in the project. The participants of the survey actively used interactive teaching tools in one of the fifth level classes; they each wrote reflections based on their experience of a specific class.

3. Survey Results

Analysis of reflection material showed that teachers' impressions on the use of interactive teaching tools in the classroom could be grouped into several groups. These groups include: impressions related to fellow teachers, or related to students, or even about the lesson and its structure, or about class and time management, etc. Recently, research results have been published on this latter survey have already been published in academic journals analysing areas including among others: the experience of teacher's at the level of their feelings in applying new technologies; the experience of teacher's as they prepare to use interactive teaching tools, etc. (Dudaitė and Prakapas, 2016a); as well as on the use of the *ActivInspire* interactive whiteboard in classroom and classroom structure, the class and time management (Dudaitė and Prakapas, 2016b). Therefore, this article presents only the survey results related to teachers' experience in using *ActivInspire* interactive evaluation system. More specifically in this particular case, it is a quick survey for students using the audience response system.

The material of the survey participants' reflections on the experiences they relate with the use of the interactive evaluation system was analyzed and the resultant hierarchical category tree is presented in Fig. 1.

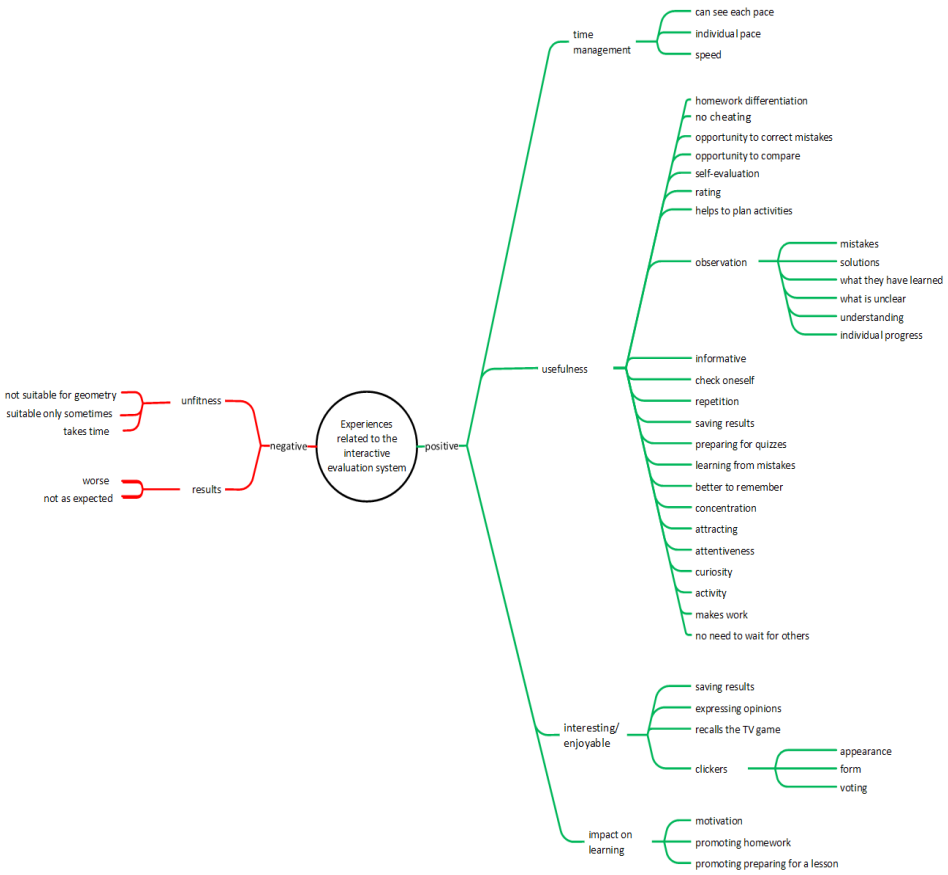

Fig. 1. Category Tree Showing: Teachers' experience in using *ActivInspire* interactive evaluation system.

3.1. *Positive Experience*

The analysis of data provided in Fig.1. shows that teachers, in principle, spoke positively about the *ActivInspire* interactive evaluation system. The positive teachers' experience can be grouped into the key categories: time management, usefulness, attractiveness, and influence on learning. Each category was grouped into several subcategories as follows.

3.1.1. *Positive Experience: Usefulness*

When speaking about their experience in working with the audience response system, the teachers particularly emphasized its usefulness. The interactive evaluation system was useful because teachers could give differentiated homework. Likewise, taking into account self-assessment of students, teachers could plan the activity of both current and future lessons: to retain current knowledge and excite students' desire for new knowl-

edge. Moreover, teachers could start a new topic or return to the subjects not fully learnt. Besides, teachers could fully observe students' work: to see what kinds of solutions were most clear and acceptable for students. Teachers could check the mistakes made by students and know if they had learnt the subject. Further, they could know what the students had learnt well and what still needed attention. Teachers could collect information and sum up the results of longer periods as well.

The teachers said that the useful thing about *ActivInspire* interactive evaluation system was that the tasks were mixed and thus the students had no opportunity to copy from each other. When an action was performed incorrectly, the same action reappeared later. Therefore, the students had an opportunity to make corrections. When the task was fully performed, the audience response system showed the evaluation and indicated the rank of the student's result among all participants. Thus the students had a possibility to compare their results with the results of others. The audience response system was useful because it was appropriate for the evaluation of a large part of the lesson content. Moreover, at the end of each lesson, the students could be given a question for self-assessment. The system allowed checking, repeating the material, and saving the results. It allowed for gathering of accurate information about each student's work in the classroom, thus helping make well-reasoned conclusions about the subjects which were not clear to students. It was also useful because the students prepared for the classes, corrected and learned from their own mistakes and mistakes of other students. The system made the students concentrate; it attracted and kept their attention; and it helped them to memorize the study material. The classroom engagement of students considerably increased because they are curious. The system made each student work because there was no need to wait until another student would complete the task.

3.1.2. *Positive Experience: Interesting/Enjoyable Classes*

The teachers noticed that the work with audience response system was enjoyable, attractive and interesting for both students and teachers. Teachers and students even liked the appearance and form of the clickers. The students liked the fact that they could express their opinion and vote, just like what they saw on some television games. The teachers like the fact that the voting results could be saved and later used for making summaries or observing students' progress.

3.1.3. *Positive Experience: Time Management*

The system allowed for quickly checking the answers and showed the teacher and all students the speed of each student. Students could work at their individual speeds because a new task was shown only when the previous task was completed. All of this pointed to more effective time management.

3.1.4. *Positive Experience: Influence on Learning*

The use of the audience response system was also an effective way to motivate students. This had a significant influence on learning, as well as stimulation to prepare homework and prepare for the lesson (students knew that they would have to show what they learned, so they did their best, paid more attention, and studied more).

3.2. *Negative Experiences*

In addition to the positive experiences, teachers also mentioned diverse negative aspects. The presentation of the negative experience of teachers can be summed up into one main category: the inadequacy of the technological tools and of study results.

The teachers sometimes saw the audience response system as inappropriate because it could not be used for certain fields, e.g. geometry. Likewise, the teachers noticed that the system could not be used for all learning situations. Obviously, it would take a lot of time to prepare interactive evaluation tasks, process and assess them, make conclusions and prepare material to be provided for students.

The teachers noticed that sometimes the results were not quite satisfying or were even worse than expected. The students liked to use clickers but this game could also distract students' attention, stop them from taking a closer look at the survey itself and not allow them to achieve the required results.

4. Discussion of Results

The majority of observations made of teachers in Lithuania related with the use of the *ActivInspire* interactive evaluation system in the classroom correspond to the conclusions of surveys on the use of audience response system provided in the scientific literature.

Most researchers mention the same or very similar aspects of the usefulness of the interactive evaluation system as teachers in Lithuania. According to Reiser and Dempsey (2007, p. 315), an audience response system is a useful way to assess students' existing knowledge before the lesson, or to activate prior knowledge to "make it available in working memory for learning". In order to learn new material, the new content needs to be integrated with existing knowledge. It is sometimes difficult for teachers to know who understands the content of a lesson. The real-time data collected by audience response system can assist teachers in tailoring feedback to timely address students' difficulties (Chien *et al.*, 2015). Instant feedback gives the teacher information about students' knowledge and it provides an opportunity to decide whether to review the topic or move on to the next topic (Chen *et al.*, 2017). The teacher can be flexible enough to redirect a lesson to meet the changing needs of the class. Feedback is also important and useful for students. The teacher can use the audience response system for summative or formative evaluation of students' results at the end of the term (Kenwright, 2009), providing information to students about where further learning or teaching needs occur (Oermann and Gaberson, 2006). Assessment in general, and self-assessment in particular may be considered meaningful when it both motivates, and helps students learn, and is understood as progress that occurs in the process for each learner. This enhances student's self-esteem and builds self-confidence (Me kauskienė and Guoba, 2016). From the feedback provided by the interactive evaluation system, students learn what they have done well and what has to be done to improve their results. Feedback is a positive reinforcement and stimulus for improvement. Students also like to compare their achievements with

others. The interactive evaluation system enables students to know immediately how their results compare with those of their classmates. If there is substantial disagreement among students' responses to the voting questions, a productive social context might emerge in which the student can clarify the questions, infer information from the questions, and justify their own solution steps (Chien *et al.*, 2015). According to Kenwright (2009), sometimes students think no one else in the class understands the lesson material and it must be the teacher's fault. When they see that 80% of the class answered the question correctly but they did not, it can be a source of motivation to study more. Students thus may have a greater sense of classroom participation and devote themselves more towards peer discussion (Brečka and Valentová, 2017, Caldwell, 2007, Duncan, 2005).

Teachers in Lithuania and their students have an overall positive experience using the audience response system. The same might be said from an analysis of results of different studies (Kenwright, 2009). The findings of a survey, conducted by Buil *et al.* (2016), show that feedback provided by the audience response system has a positive influence on students' self-motivated efficacy and their self-esteem. According to the results of the survey, self-motivated efficacy has a negative influence on boredom. Self-esteem has a positive effect on enjoyment and pride, and a negative effect on boredom. The positive experience by students while using the audience response system is grounds for predicting both intrinsic and extrinsic motivation. Pride has a positive effect on extrinsic motivation, whereas boredom has a negative influence on students' intrinsic motivation. Finally, both types of motivation predict perceived learning and satisfaction (Buil *et al.*, 2016). With an emphasis on mathematics, research by a number of scholars also showed that the audience response system enhances student engagement and helps to create a more energized classroom environment where students enjoy learning (Bode, 2009; Cline *et al.*, 2006, 2007). Using voting clickers is fun, encouraging lively discussions, and promoting active learning in the classroom. It breaks up the passive learning format of a lecture by engaging students in thinking and discussing the solutions to teachers' questions, increasing students' interest and participation (Caldwell, 2007). As Ribbens (2007) observes, without the audience response system, the same students often answer the questions week after week, but the possibility to vote forces every student to answer. The whole class cheers when 100% of the students answer the question correctly (Kenwright, 2009). Using the audience response system increases student–teacher interaction. Being able to vote anonymously gives the students more courage to express their opinion (Chen *et al.*, 2017). Responses can be quickly calculated and displayed as a bar graph. The students enjoy that they can tell instantly what percentage of the class chose a particular answer.

Teachers in Lithuania admit that the use of the *ActivInspire* interactive evaluation system has much influence on learning. It encourages study, motivates students, and makes the learning experience more effective. Similar conclusions are made by Latullipe and Miller: using technology is more effective than traditional routine chalkboard lessons and allows for more active student engagement in class (Latullipe, 2016). If the audience response system questions were selected appropriately to enhance student collaboration and engagement, then the system could be used to significantly enhance learning in mathematics (Miller *et al.*, 2006).

In respect to the time spent for using the *ActivInspire* interactive evaluation system, opinions of the teachers are ambiguous. On the one hand, it helps managing lesson time because surveys are quick and students can work at their individual speeds as a new task is given only when the previous one is completed. On the other hand, the teachers noticed that the use of interactive evaluation system takes a lot of time, including time for learning how to use the system, preparation for surveys, and sometimes dealing with technical problems. Similar disadvantages of the interactive evaluation system are observed by other researchers as well. Time seems to be a common problem. Users of the interactive evaluation system complain about time spent learning to use the software (Hatch *et al.*, 2005) or time spent setting up and taking down the hardware (Stuart *et al.*, 2004). According to DeBourgh (2008), designing effective test questions can also be time consuming.

With respect to negative experiences of working with the interactive audience response system, teachers in Lithuania mentioned that this system does not suit all educational content areas, and it does not always allow for the achievement of desired study goals. Similar observations are made by Stuart *et al.* (2004). According to Stuart, the experience of using the audience response system in a class setting was not always good because the questions teacher used were often too subjective or specific. The students did not have enough time to discuss the questions and answers. And so a clear limitation of audience response system is the type of questions that can be asked. However, according to Barth-Cohen *et al.* (2016), carefully designed "clicker" questions can help stimulate students and engage them in peer discussion.

In terms of the influence of the interactive evaluation system on students' study achievements, there is no unanimous opinion about this matter. Students often perceive that using the audience response system has a positive effect on their grades (DeBourgh, 2008). The meta-analysis conducted by Hunsu *et al.* (2016) compared classrooms that did and did not use the audience response system-based technologies on different learning outcomes in order to examine the potential effects of using technologies. They found small but significant effects of using technologies on a number of desirable cognitive and non-cognitive learning outcomes. Daniel and Tivener (2016) support the idea that using of the audience response system is an effective way to achieve the positive outcomes associated with active learning. The findings based on the summative and informal assessment test scores of the experiment, conducted by Wang *et al.* (2014), show that, for the students in the trial group, the use of the audience response system did improve the student learning outcome in mathematics compared to the control group. The results showed that the use of technology had a positive impact as these students gained better test scores. But some other studies show that there are no significant differences in test scores between the groups that used and those that did not use the audience response system (Salmon and Stahl, 2005).

The experience of teachers in Lithuania who used the interactive evaluation system in the classroom was similar to the experience of teachers of other countries. There is currently no possibility of comparing the results of this survey with other surveys conducted in Lithuania on teachers' experience in using the interactive evaluation system in education process because no such surveys have been carried out before.

In this article, the data of the survey carried out in the 2013–2014 school year are analyzed. Almost three years have passed since then. The technological change determines the changes in application of *ActiveInspire* interactive evaluation system as well. Three years ago, the clickers were the only voting tool, and now they are increasingly replaced by mobile phones. However, the concept of the interactive evaluation system and its benefits to the learning process remain unchanged. Only the voting tools have changed. One of the disadvantages on the use of physical clickers which is becoming increasingly significant in today's classrooms is the fact that the use of the physical clicker is restricted to a single node school-based classroom and does not help for engaging students in the modern distance education based classrooms in multiple locations (Premadasa *et al.*, 2016). Nevertheless, this problem is easily solved by using mobile phones instead of the clickers.

5. Limitations of the Study

In order to analyse experience of teachers in Lithuania who use the interactive evaluation system in classroom, the study was limited to ten schools in which the *ActivInspire* system was used. As regards the selection of teachers, the study had to be limited to teachers who teach mathematics and science at the fifth level because only the electronic textbooks for the said subjects and only at the fifth level existed at the time of the implementation of the survey. These conditions determined the survey sample.

At the beginning of the survey, twenty teachers were selected as survey participants but only six of them wrote reflections to the end of the survey. The most common reason for refusal to continue the participation in the survey was the lack of time for writing reflections. Some teachers indicated reduced motivation in recording their experience in detail. Some teachers stopped their participation in the survey due to illness. However, the possibility that those six participants who stayed in the survey to the end were the most motivated teachers and this could influence the survey results cannot be ruled out, i.e. the experience of teachers could have been less positive if all 20 teachers continued their participation in the survey to the end.

Another aspect which could have determined such positive results of the survey was the fact that the teachers who participated in the survey had the sufficient skills of using information communication technologies. If survey participants were not so good at using technologies, the survey results might have been less positive.

Conclusion

The experience of teachers in using the interactive evaluation system in the classroom, in principle, is positive. In particular, the teachers emphasized the usefulness of the audience response system. It helps to make student evaluation and self-assessment easier. Students learn from mistakes. There is a differentiation in answers to homework. But also, the system helps students to correct their own mistakes as well as articulate their

own opinion in real time. Moreover, the evaluation system is a check on the vice of copying. The system further enables teachers to save results of the learning process, as well as make summaries of students' progress over time. By attracting attention, it helps the students to stay attentive, active and curious. In addition to usefulness, the teachers also distinguished the following aspects: attractiveness, time management, and influence on learning.

In regard to the negative experience of using the interactive evaluation system, the teachers mentioned that this evaluation system does not suit every lesson, it takes much time to prepare, and does not always allow for achieving the sought study goals. All in all, studies on experience in using the interactive evaluation system in Lithuania have not been carried out before. This survey has showed that experience of teachers in Lithuania in using the *ActivInspire* evaluation system in classroom is similar to that of teachers of other countries.

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