The influence of smart board technology on student engagement in and perception of classroom activities

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Abstract — There is no doubt that technology has become a common element in the education system. Therefore, the amount of studies has expanded significantly in the context of implementation of new technological tools. One relatively new piece of technical equipment that is rapidly being deployed in schools as an aid to teachers is the Smart Board (SB). There are some studies covering the subject such as advantages and disadvantages of the SB, the influence of SB’s on student motivation, and the use of SB’s in teaching content courses such as geography. Nevertheless, there has been no specific research on the subject of SB utilisation in foreign language classrooms. This study investigates the influence of SB technology on student engagement in and their perception of classroom activities. This research paper looks at the differences between first grade and fifth grade students’ on-task and off-task behaviours during 40-minute English language lessons that either utilised SB or did not. Student perceptions were measured by means of a questionnaire. Momentary time-sampling was implemented throughout the research process. The research sample was composed of 38 students at Yönelt College in Muğla, Turkey. The results of the questionnaire and momentary time-sampling show that SBs enhance student engagement and enhance active participation in the foreign language classroom. This study reveals that the integration of SB technology increases first grade students’ on-task behaviour significantly more than fifth grade students’.

Keywords — Smart board, primary school students, foreign language classroom, young learners.

1. Introduction

Technology has become one of the vital subject areas of studies carried out by many researchers from various fields. One of them was a research paper titled “Integration of SB Technology and Effective”, published in the “I-Manager’s Journal on School Educational Technology” (Min & Siegel, 2011) which was conducted in a second-grade general education classroom during 30-minute mathematics and science lessons. Another research, named “Elementary school students’ views toward SB practices” (Sünkür, Şanlı, & Arabricı, 2011), consisted of a study of fifth to eighth grade students in order to determine their views toward SB practices. According to further research suggested by the authors of these two studies, what is needed is to determine if the integration of SB technology enhances the engagement of students and facilitates valuable learning process at other grade levels, for other demographic backgrounds, and in other subject areas. This study focuses on the following questions: 1) Does the integration of SB technology with effective teaching methods enhance student engagement? and, 2) What are students’ perceptions of lessons that include or exclude SB technology?

2. Methodology

2.1. Participants

The research was conducted in first and fifth grade classrooms over the course of six weeks during the autumn term of the 2013-2014 Educational Year. A total number of 38 participants were observed by the researcher, who recorded the whole research process within the foreign language classroom.

2.2. Sample

The study was carried out at a private school (Yönelt College), which is equipped with neoteric technological tools such as laptops, i-Pads, projectors, the Internet, and audio equipment. In addition, SB technology was implemented into every classroom as innovative and practical support for the enhancement of teaching and learning in the classroom environment. All teachers, including English language teachers, were trained at the beginning of year by specialists from Pearson, the company that provides Yönelt College with their English course books.

2.3. Instruments

SB is a technology whereby a computer is connected to both a projector and a touch-sensitive whiteboard that presents visible images and graphics. Students have the opportunity to control and manipulate the projected images on the SB using their fingers. For instance, during an English lesson with first grade students, the teacher arranged a questionnaire activity using SB technology. When the young learners answered a question correctly, music was automatically played in the classroom and they received points; consequently, the young students were excited and motivated to learn.

2.4. Procedures

During the research, momentary time-sampling procedure was used in order to measure students’ task-related behaviour. Momentary time sampling is an interval recording method, or strategy that involves observing whether a behaviour occurs or does not occur during specified time periods.

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Once the length of an observation session has been identified, the time is broken down into smaller time intervals which are all of equal length (http://www.specialconnections.ku.edu/?q=assessment/data_based_decision_making/teacher_tools/momentary_time_sample_recording). For this research, the 40-minute lessons were divided into 240 intervals each of 10 seconds duration for the purposes of recording. At the beginning of each 10-second interval, the behaviour of a student was observed and recorded as either on-task (+) or off-task (-).

According to Min & Siegel (2011:41), on-task behaviour is defined as “the student raising his/her hand, answering questions, writing when appropriate, contributing to topic discussions, following directions, asking relevant questions, making eye-contact with the teacher or looking at the SB.” Off-task behaviour is defined as “the student looking around the room, at another student or down at the floor, writing or drawing when not appropriate, playing, talking to other students when not appropriate, distracting other students, and getting out of his/her seat without permission.” (p. 41). At the beginning of the next 10-second interval, another student’s behaviour was observed and recorded so that each student was observed many times over during a single lesson.

As part of this study, a questionnaire was implemented to examine the students’ perceptions and to assess their level of understanding, participation, attention and learning in a foreign language classroom. The questionnaire consisted of five questions, each with Yes/No response options. At the end of the observation process, students from fifth grade classroom were requested to answer the questions. For the first graders, their teacher read all the questions out loud and the students just raised their hands if they wanted to give a positive answer.

3. Data analysis
3.1. Student engagement

For purposes of this study, the percentage of on-task behaviour was identified through observation during 40-minute English lessons in both first and fifth grade classrooms. In total twelve English language lessons were monitored in order to determine the influence of SB technology on student engagement in and their perception of classroom activities.

As demonstrated in Graph 1, the average percentage of intervals of on-task behaviour among first-grade students without SB was 59%, but with SB it was 86%. In Graph 2, the mean percentage of on-task intervals in the fifth-grade classroom without SB was 69% and with SB it was 82%. As shown on both charts, the significant differences of 27% for the first-grade and 13% for the fifth-grade classrooms were seen between the inclusion and exclusion of SB technology.

In Graph 3, there is only a 4% differential for on-task behaviours between first and fifth grade students while using SB. Meanwhile, in Graph 4, where there was no SB, a 10% differential was observed.

The data presented in all four graphs point to a substantial influence of using SB technology on students’ on-task behaviours.

All tables should be numbered with Arabic numerals. Headings should be placed above tables, underlined and centred. Leave one line space between the heading and the table. Only horizontal lines should be used within a table, to distinguish the column headings from the body of the table. Tables must be embedded into the text and not supplied separately.

Graph 1. Percentages of intervals of on-task behaviour for first-grade English language classroom
Graph 2. Percentages of intervals of on-task behaviour for fifth-grade English language classroom

Graph 3. The differences of on-task behaviours between first and fifth grade students while using SB

Graph 4. The differences of on-task behaviours between first and fifth grade students while using SB
3.2. Student perceptions

In order to understand the students’ perception a questionnaire was applied at the end of the observation process. A total of 38 students took part, and the questionnaire consisted of five questions with Yes/No response options.

The table below demonstrates that both first and fifth grade students had more fun when the teacher uses the SB. On the other hand, first grade learners were able to participate more with SB than the fifth grade students. As indicated from the responses of participants, there is a significant difference of 48% between the two groups. First grade students pay more attention and learn more with SB than do fifth grade students. Consequently, the implementation of SB in teaching English to first grade students is more beneficial than for fifth grade students. According to the results of the questionnaire, fifth grade students perceive SB as a tool to be used for enjoyment such as listening to music, watching videos, etc., while first grade students show the best results for engagement in classroom activities when the teacher uses SB technology.

Table 1. Results of the questionnaire that measured students’ perception

<table>
<thead>
<tr>
<th>Questions</th>
<th>Grade 1</th>
<th>Grade 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>When the teacher uses the SB, the class is more fun than when the teacher does not use it.</td>
<td>100% 0%</td>
<td>100% 0%</td>
</tr>
<tr>
<td>When the teacher uses the SB, I get to participate more than when the teacher does not use it.</td>
<td>88% 12%</td>
<td>81% 19%</td>
</tr>
<tr>
<td>When the teacher uses the SB, I understand more than when the teacher does not use it.</td>
<td>100% 0%</td>
<td>52% 48%</td>
</tr>
<tr>
<td>When the teacher uses the SB, I pay more attention than when the teacher does not use it.</td>
<td>94% 6%</td>
<td>24% 76%</td>
</tr>
<tr>
<td>When the teacher uses the SB, I learn more than when the teacher does not use it.</td>
<td>100% 0%</td>
<td>33% 67%</td>
</tr>
</tbody>
</table>

4. Discussion

There is no doubt that technology has become a common element within the education system. Therefore, it is almost impossible to imagine the contemporary classroom without e-learning tools such as computers, SBs, i-Pads, projectors, digital cameras, the Internet, audio equipment, scanners, printers, e-mails, video conferencing, etc. Each of these technological tools plays a significant role in providing learners with enjoyable, effective, and practical learning processes, which have a considerable influence on the students’ performance. Using technology in the classroom enhances children’s motivation and performance in the learning area. There are many studies, which point out that students learn more contentedly and faster through the implementation of technological facilities (Faucett, 2000).

5. Conclusion

The purpose of this research study was to identify the effect of using SB technology on student engagement in and their perception of classroom activities. Specifically, to see if student engagement in the learning process increased when SBs were included or excluded in classroom activities, and moreover, to compare the results of observation between two different age groups: first grade and fifth grade learners.

The results of this study indicate that SB technology can be used in the classroom in order to increase student engagement during the learning process. Nevertheless, first grade students are much more engaged in classroom activities than fifth grade students. We assume that this statement is related to Piaget’s cognitive development stages. According to Piaget (In: Charles, (2003)), seven-age-group children learn new things visibly, whereas fifth grade students begin thinking logically about concrete events. As examined in this study, fifth grade students learn and understand much better without SB than with SB.

There are many issues related to the use of SB technology in the classroom that still need to be examined. First of all, the impact of SB technology on learners’ input and output skills needs to be investigated, and whether or not the integration of SB increases language skills. Additionally, the use of SB at universities should also be investigated.
6. References