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Interactive Response Systems (IRS) Socrative Application Sample

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Abstract

In globally developing education system, technology has made instructional improved in many ways. One of these improvements is the Interactive Response Systems (IRS) that are applied in classroom activities. Therefore, it is "smart" to focus on interactive response systems in learning environment. This study was conducted aiming to focus on using Socrative application as a feedback agent among IRSs. The study mainly focused on how could Socrative program as a smart feedback agent be effective in fostering students' learning. Additionally, students' responses were examined to have an overall sense of a digitally supported learning period. The study was designed on action research. The research was conducted with 53 junior year students who were prospective teachers in different fields at the same time. In order to obtain, 11 item-survey was developed by the researchers to realize how Socrative program could contribute to reinforce learning in detail. Besides, unsystematic interviews on program's strong and weak aspects were maintained. The results indicated Socrative program as a feedback agent could be benefited in learning process thanks to its accessibility, immediateness, and continuous interaction. The results also revealed that participants of the study perceived the program positively and attended the course more motivated. The study also reflected that students as prospective teachers more eagerly participated in digitally supported than traditionally maintained instructional activities.

Keywords: interactive response systems, participation, learning integration, socrative

1. Introduction

"Digital effect" has been accepted in every field of life so far and has become one of the major parts of dynamic education. Thanks to handy devices, today's students interact with technology more than past. As a contributing fellow, internet leads students into digital world more often. As the matter of fact, technology is directed to be effective supporters in learning environments. Considering recent studies of educational field, effectively integrated technology tools in instructions have been the cores of teaching techniques. These tools seem to enable teachers and educators to facilitate meaningful and permanent learning in-and-out of the class hours. Besides, these digital worlds can be stepped in to increase motivation, enrich instructional period, make more objective evaluations, and maintain hands-on tasks (Hall, Thomas, Collier, & Hilgers, 2005). It is more common to witness techno-aids that are preferred to be benefited for motivation and teaching activities, though. Interactive Response Systems, however, can present immediate feedbacks for both teachers and students and so evaluative steps can be circulated in the whole instructional period. Therefore, both students and teachers can follow whether everything is on the right track. These systems can also be applied for reinforcement in mental and physical participation of students in classroom activities. Stowell and Nelson (2007) indicated in their studies that the interactive student response system they applied in their classes raised students' awareness and increased their active participation in learning process. It was also found that interactive activities contributed to students' academic success and had a significant effect on students learning more compared to traditional response systems (Akdemir, Kunt, & Tekin, 2015).

Similarly, most of the students using this system highlighted that their motivation freshened, they were encouraged to learn cooperatively (Jones, Antonenkot, & Greenwood, 2012), and the system was effective in learning (Auras & Biz, 2007).

Response by both students and teachers represents a *Feedback*. It is an important step in educational tasks to assure realisation as highlighted by Gagne and Driscoll (1988). As far as digital enhancements are concerned, interactive response systems do not ignore technology support in educational field. The interactive response system studied in this research can increase the pace of feedback session. The system also supports shy students'

participation in feedback sessions by enabling them to hinder behind their digital tools (Reilly & Shen, 2011). Dangle and Wang (2008) highlighted that thanks to interactive response systems, students focused on comprehension rather than pure input.

This study is expected to contribute to the educational technology field remarkably concerning interactive response system application in teaching. Aiming to present a digital help, it was studied to what extend smart phones, internet and Socrative program (response system) could be used for organizing discussions in instructional period, individual and/or group work, and simultaneous feedback sessions.

In the study, answers for the below questions were sought:

- How is the effect of interactive response system on students?
- What are the weaknesses and strengths of the interactive response system in the perspectives of the students?

Interactive educational systems are preferred mostly in classroom for the instruction itself. However, in this study, the system was adopted to conduct feedback period in learning. Therefore, it is one of the newly studies observing and evaluating digital support in classroom for responsive purposes. To have more understandings and clues for better use of technology in-and-out of the classrooms, such studies are necessary to experience direct and/or indirect effects.

2. Method

In study, action research which is one of the designs of qualitative research methods was applied. Action research as a widely accepted opinion is a research in which the teacher himself/herself does the research. Action research can be defined as study period for understanding and enhancing instructional quality in real classroom or school environment (Johnson, 2014). Among action research types, collaborative action research type was preferred. In collaborative action research, many researchers from schools and universities come together to work on educational problems. In such a research type, the aim of the study is to benefit from the researchers', participating in the research, areas of specialization and maintain the dialogue between people from different educational fields (Derince & Özgen, 2015).

Action research consists of a triangular relationship among researcher and others (A), the researched topic (B) and mutual topic (X) (Benium, 1999). It is usually named as ABX system. ABX system is defined as a single stand and also with each element itself in the system. The action research mostly requires both quantitative and qualitative data at the same time (Bryman, 2008; referred by Bell & Alridge, 2014). In the study, both quantitative and qualitative data were gathered simultenously.

2.1 Participants

The study was conducted with 53 junior year students studying at Muğla Sıtkı Koçman University, Faculty of Education, in the Primary Education Department. The sample was determined as convenience sampling of purposive sampling methods. Purposive sampling methods are seen beneficial in discovery and clarity in many cases, phenomenon and situations (Yıldırım & Şimşek, 2013).

2.2 Procedure

The Socrative program was applied to junior year students of "Measurement and Evaluation" course in 2015-2016 fall semester as feedback activity to study the program's efficiency as a feedback tool. Socrative is a free online program among interactive response systems. The program can promote a relationship between students-teacher and mobile technology devices in classroom environment. A pilot application was conducted to reveal prospective teachers' opinions about whether the program could be maintained and be beneficial in learning. Their opinions were obtained through a written form anonymously. There were some participants stating negative statements. As a result, it was found that prospective teachers were volunteer and willing to apply the program.

The result of the pilot application highlighted that the study could be maintained. In the following periods, the researchers continued working collaboratively with Socrative program. Based on the course attainments, the responsible instructor of the course prepared target questions beforehand and uploaded them to the program, and at the end of the course sessions, these questions were presented as a feedback session via Socrative program. As it can be seen in Table 1, these applications lasted approximately 20 minutes. In the application procedure, students accessed to program thanks to internet on their smart phones and answered the questions. Students not having smart phones and/or internet access were coupled with the students not having the same problems. After weekly activities were completed, students were given a reflection survey with 11 items. The survey was

3-Likert type and it was prepared by the researchers based on field experts' support. Beside survey, students were to answer two open ended questions for further details of their opinions about the procedure. In order to contribute to future course sessions, students were also asked how often the program would be applied. Activities in the action was planned by the researchers beforehand and conducted followingly.

2.3 Action Plan

Participants were firstly informed about Socrative program and they were directed to have an account to use during class activities. For the first week, they got accustomed to use Socrative via their smart phones. The participants who did not have smart phones or had connection problems were determined and supported. In the following weeks, the participants were asked to answer content related questions which were placed in the program. After the instructor completed his instruction, participants joined in interactive class. They raced in groups, they shared their answers, they collaborated. The questions in the platform were prepared in different types such as true-false, short anwer, multiple choice questions.

2.4 Data Analysis

In the quantitative data analysis, frequency and percentages were referred. In the qualitative data, content analysis was conducted. The main purpose of content analysis is to reach concepts and relations to analyze the obtained data (Yıldırım & Şimşek, 2013). In the qualitative data, prospective teachers' written comments were analyzed and categorized. In order to form sub items, similar items re-examined in themes.

3. Results

In this study, reflections of prospective teachers on Socrative program of interactive response systems in class activities for feedback tool were examined.

3.1 Results of Interactive Response Systems Effects on Students

The frequency and percentage findings of Socrative program effects on students were presented in Table 1 below.

Table 1. Socrative program effects on students

Items	**Agree**		**Unsure**		**Disagree**	
The program;	f	%	f	%	f	%
1. positively contributed to my participation in course.	53	100				
2. positively contributed to my understanding of the topics.	52	98,1	1	1,9		
3. positively contributed to my learning process.	53	100				
4. included related questions with the course topics.	52	98,1	1	1,9		
5. encoraged to learn individually.	45	84,9	7	13,2	1	1,9
6. encouraged to learn cooperatively.	40	75,5	11	20,8	2	3,8
7. increased my focus on learning.	49	92,5	3	5,7	1	1,9
8. increased my desire to use technology.	36	67,9	12	22,6	5	9,4
9. gave an opportunity to use time flexibly.	44	83,0	9	17,0		
10. gave an oppurtunity learn aurally and visually.	46	86,8	5	9,4	2	3,8
11. helped to improve practical knowledge.	52	98,1	1	1,9		

Based on the results of the survey, it was seen that students were positively affected by the program application, but they were unsure about "increasing desire to use technology (22,6%), encouraging to learn cooperatively (20,8%) and using time flexibly (17,0)" items.

Students' reflections on how often the program should be applied question were presented with frequency and percentage results in Table 2 below.

Table 2. Reflections on application frequency

Application frequency	f	%
Similar frequency (once in two weeks)	41	77,4
More	11	20,8
Less	1	1,9
Never	0	0,0
Total	53	100,0

Based on the answers given, it was revealed that students preferred the program to be applied one in two weeks (77,4%) at the highest percentage. It was highlighted that the program was expected to be continued.

3.2 Results of the Weaknesses and Strengths of the Interactive Response System in the Perspectives of the Students

Through open ended questions asked to the students to whom the program was applied, the weaknesses and strengths of the program were examined. Students' answers were categorized and thematized. In the analysis, it was revealed that almost all participants reflected positive opinions about the program. These opinions were summarized in Table 3 below.

Table 3. Positive effects of Socrative in class activities

	f	(%)		(f)
Effective Feedback Mean	42	(36)	Time saving in feedback	(9)
			Giving feedback to more students in one time	(8)
			Realizing what is correct/wrong	(7)
			Immediate feedback	(6)
			Quick answer	(5)
			Opportunity to correction	(3)
			Representative of "advanced education"	(2)
			Feedback for teacher whether the topic was comprehended	(1)
			General overview of the course	(1)
Contributor to the Recalling and Processing the Knowledge	25	(22)	Recall and permenance	(10)
			Repeatitive	(7)
			Better comprehension and understanding	(4)
			Practice with questions	(2)
			Increasing pace of thinking	(2)
Entertaining, Enjoyable and Motivating Course Sessions	21	(18)	Race atmosphere- not boring, but fun	(13)
			Motivating- attractive	(5)
			Attractive in phone and internet use	(2)
			Saving from boredom	(1)
Knowledge Reinforce	20	(17)	Reinforcing what is learnt	(19)
			Clarity in topics	(1)
Indirect Effect-Pragmatic Benefit	8	(7)	Active participation	(3)
			Facing with different question types	(2)
			Preparation for exam -Easy access to questions	(2)
			Encouraging collaboration	(1)

According to the results, prospective teachers perceived the program as an effective feedback (36%) mean. Additionally, they pointed that the program contributed to recalling and processing the knowledge (22%), provided an enjoyable classroom environment (18%), and reinforced learning (7%). In the open-ended questions, the program as an effective feedback tool was emphasized more compared to other contributions. Related statements were shown below:

"…it is also time saving as feedback tool since it reaches more students…"

"…we immediately realize our mistakes…"

"…I confirm what I learn immediately…"

"…it is very practical in terms of seeing questions at the same time as a whole class…"

Prospective teachers' similar reflections were thematized as "effective feedback tool". In this theme, it was indicated that students' reflections were mainly based on the program's opportunity for feedback to more students, overview of the course, immediate answers, time saving, self-correction, and realization of what is wrong or right. Besides, two students remarked that the program was a symbol of an advanced education, and one student emphasized that a teacher could track the learning procedure under the "effective feedback tool" category.

It was noticed that prospective teachers were on the opinion that the program contributed to knowledge recall and process. The opinions in this category were stressed as the second important benefit. Some of the related statements were given below.

"…Answering questions about the course topic increases the permanence…"

"…since we use it at the end of the course, it becomes a repetition of what is learnt and so it is beneficial I think…"

"…it is a kind of review of the course. We have the opportunity to use the knowledge in practice. When it becomes in race, it increases the motivation…"

"…it helps to keep the knowledge in mind. Mistakes and correct answers are realized…"

"…the overview ensures permanent learning. It helps to learn by doing, and constructing knowledge…"

The similar reflections were categorized in "contributions to knowledge recall and process". In this theme, there were also reflections on the program's opportunity for recalling and permanent learning, better comprehension, repeating what is learnt, experiencing the knowledge in real context, and quick thinking.

Prospective teachers found the program as enjoyable, entertaining and motivating. Related statements were given below.

"…We are not bored in course sessions..."

"…There is also competitive atmosphere so that it is an amusing application..."

"…seeing the names increases the competition. The competition becomes fun…"

"…since it is like a race, we answer the questions with fun..."

"…Questions are solved with fun..."

The similar statements were categorized in "enjoyable, entertaining and motivating class environment". In this theme, there were also reflections on the program's opportunity for motivating, attractive, competitive, and enjoyable learning environment. In addition to the themes above, in some of the students' reflections it was found that there were pragmatic benefits as an indirect effect. In this pragmatic theme, students reflected as seeing different types of questions, preparation for the exam, access to questions, collaboration with students not having smart phones and/or internet, and increasing participation.

In the open ended questions, the weakness of the program were tried to be determined. Most of the participants found the program practical, handy, motivating, and easily accessible. To the question "What is the weakness of Socrative program in your opinion?", 21 (40%) prospective teachers of 53 answered that there was no weak part of the program. The negative reflections were summarized in Table 4.

Table 4. Weakness of socrative program

Problem area	f	(%)		f
Technical problem	33	(89)	No access to internet	(11)
			Connection problems to internet	(22)
Non-technical problems	4	(11)	In equality of opportunity due to students better at using internet	(2)
			Delays in answering some of the questions	(1)
			Shut down of the system before students respond	(1)

According to the results in Table 4, participants reflected that Socrative program mostly caused problems due to technical problems. It was stressed that the main problems during applications appeared because of internet connection weaknesses. Additionally, there were students indicating the disadvantages of smart phones and internet use in the program. However, it was noticed that the negative statements were based on technical problems, not on the program and its application process.

Prospective teachers conclusively stated non-technical problems existing in the program application. Two of the participants pointed these negative sides as inequality of opportunity for the students who did not have smart phone and were worse at using internet. Besides, it was highlighted that some of the short answer-open ended questions' answers were not correctly coded so that some of the answers were disapproved by the program. Delays in answers and program's being shut down were the other stated weaknesses of the program.

4. Discussion

It is observed that students do not respond to the questions in some courses as they are expected to do. This can result decrease in participation and motivation in learning. In traditionally given feedbacks, students were asked questions by teachers; which is not considered as an effective feedback activity any more. It is also noticed that many number of students do not involve in the process actively either. According to Erişen's study (1997), very few of the instructors are observed in the behaviors of checking previous knowledge, correcting false learning, discussing on answers, encouraging students to find the correct answers, helping students in peer-feedback and hints, leading students the prior sources for better learning, and presenting detailed information about a topic for interested students. The results of the study showed that Socrative offered an advantage for active participation in feedback sessions when compared to traditional methods. All the participants pointed that the program was sufficient and had positive impacts. Furthermore, more than 90% of the participants agreed on the impacts that the program helped to comprehend, focus, and practice the content. These results highlight that the interactive response system engage students in teaching-learning procedure more actively than traditional methods of feedback.

In addition, in the themes of open-ended questions, prospective teachers shared the opinions that the program was an effective feedback activity, contributed to recalling and processing, made the course entertaining, and reinforced what was learnt. This result shows parallelism with what Baumann, Marchetti and Soltoff (2015), and Hall, Thomas, Collier and Hilgers (2005) found in their study pointing that response systems help students engage in classroom activities actively and increase their motivation for deeper learning.

Another strong effect of IRS was stated as involving shy students in activities. It was noticed in unsystematic interviews and study findings that prospective teachers as adults behaved less recessively during the program activities. Studies by Karakostas, Adam, Kioutsiouki and Demetriadis (2014) and Patterson, Kilpatrick and Woebkenberg (2010) showed that students using such response programs were in favor of the procedures. Additionally, they did not feel embarrassed though they answered incorrectly. These studies results supported the study's findings.

When Akkuzu and Uyulgan's (2014) feedback scale in their study is examined, it is seen that questions are mainly focused on two factors concerning prospective teachers' professional development and anxiety level. The significance of prospective teachers finding interactive response system effective can be the sign of positive contribution to their learnings. If they do not find the program's activities effective and real, they will not react favorably; therefore, there cannot be a remarkable change in instructional methods (Akkuzu & Uyulgan, 2014). Their positive attitudes towards the program will reinforce their professional developments as well (Çabakçor, Akşan, Öztürk, & Çimer, 2011).

Socrative application among interactive response systems came to conclusion with satisfactory results. As stated in themes, students reflected promotive statements for the program, highlighting its effectiveness in recalling, processing, correcting, and reinforcing what is learnt. In the light of all these findings, it could be assistive to integrate interactive student response systems in feedback sessions besides not escapable methods.

On the contrary to strong effects of the program, there found weaknesses about the program. Some participants stated that using the program online brought the internet connection problem forward. Since they could not connect to internet, some of the students could not answer the question nor did they use the program. During application procedure, there were also students who had tendency to use technology and its tools more quickly. It, consequently, affected the response time period of other students negatively. As the final conclusion, the responses to application frequency for Socrative can be interpreted as the prospective teachers' pleasure with the program.

It can be said that interactive response system has a positive gaining and effect on students. Particularly, applying such and similar systems in teacher education programs both in class sessions as an activity and as a teacher model will lead new teachers to use technology in their future professions. Thus, technology literacy will be improved and future teachers will be familiar with where and how the technology can be applied in teaching-learning.

Interactive response systems which are not widely known and applied in education can be introduced and popularized in educational areas. For this reason, there can be workshops for teacher/educators, studies on different fields and cooperation with other educational associations. Hence, applications can be widely used and their effects can be observed with further details.

Conducting this study in higher education does not necessarily mean that same effects and results will be obtained from different stages of education. Therefore, same study can be applied in different educational stages to observe the effects of such systems.

It can be a limitation for the study to apply the program only at the end of the course sessions only for feedback activities. The program can be applied in different activities (warm-up, lead in, instruction, examination etc.) as well.

The handicaps faced with during the program application should guide the researchers planning to study on similar systems. It is important to provide students with continuous and interrupted online connection for more effective results of the programs. In this regard, the institutions aiming to use such technology tools should strengthen their physical and technological equipment, and substructure.

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