Students' Perception of Using Student Response System in Advanced Financial Accounting

Kam Por Yuen

The Hong Kong Polytechnic University, Hung Hom, Hong Kong

The introduction of uReply, a student response system (SRS), in the advanced financial accounting course for accounting and finance students at a university in Hong Kong provided an opportunity to measure the student perception of using SRS. The study was conducted over the advanced financial accounting classes, with 120 students participated in the use of SRS. Forty students completed surveys two months after the completion of the semester. The result of the questionnaire shows that students' perception of using SRS is positive in advanced financial accounting classes.

Keywords: student response system (SRS), uReply, student perception, clickers, advanced financial accounting

Introduction

Hong Kong has recently experienced a significant demand in promoting active learning by using technology. This demand for active learning has presented new challenges to the lecturers.

It is argued that traditional classes facilitate passive learning. Students receive passively information presented by the instructor and they are not engaged in the learning process. When students are passive in the learning process, they demonstrate limited attention spans and low retention rates of information taught in classes (Bonwell & Eison, 1991).

In contrast, active learning that encourages active student participation is a better way to enhance learning (Chickering & Gamson, 1987). The use of a student response system (SRS) can help facilitate the transition from passive to active learning (Martyn, 2007). The other common names for SRS include: clickers, electronic response system (ERS), classroom response system (CRS), audience response system, electronic voting system, and personal response system. Carnaghan and Webb (2007) found that students worked harder to prepare for classes when SRSs were used, while Robinson (2006) found that the use of SRSs encourages students to come to classes.

Nearly all prior SRS studies in accounting used introductory courses. This is the first to use advanced financial accounting course to study on the perception of using SRS. The study of advanced financial accounting, in particular the consolidated financial statements, is often considered by students as a complicated and challenging task. This study contributes to the literature of using SRS in teaching advanced courses in accounting.

With the use of SRS, participation in classes is made easier by connecting each participant to the instructor. The instructor can post a question to the students and ask the students to answer, and the students' responses are

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Kam Por Yuen, DBA, senior teaching fellow, School of Accounting and Finance, The Hong Kong Polytechnic University.

displayed immediately on screen for both instructor and students to see. Therefore, immediate feedback is received, discussion is enhanced, and students' participation and attention span is increased (Draper & Brown, 2004; Cubric & Jefferies, 2015).

This paper reviews the current research on SRSs, provides a brief description of how uReply has been used in the advanced financial accounting course, reports the results and findings, and finally presents conclusions and opportunities for additional research.

Research Background

Studies of using SRS in classes have reported that SRS classes were more active and engaging. It allowed students to focus on key points in classes and students perceived that SRS increased their level of confidence (Tregonning, Doherty, Hornbuckle, & Dickinson, 2012). SRS also allowed students to measure their level of understanding of knowledge taught in classes and allowed them to gauge the knowledge of other students in the class (Draper & Brown, 2004; Han & Finkelstein, 2013).

Carnaghan, Edmonds, Lechner, and Olds (2011) reviewed the studies on using SRSs and categorized the benefits: student preparation for class (Carnaghan & Webb, 2007), student attendance (Robinson, 2006), student participation and engagement (Hoekstra, 2008; Fies & Marshall, 2008), student satisfaction and enjoyment (Mula & Kavanagh, 2009), improved instructor performance (C. T. Edmonds & T. P. Edmonds, 2010), improved student learning (Carnaghan & Webb, 2007; C. T. Edmonds & T. P. Edmonds, 2010; Premuroso, Tong, & Beed, 2011), and more frequent and timely feedback to students (Mayer et al., 2009).

Basically, it is agreed that the use of SRS can be an effective tool to encourage participation in classes. However, the designs of SRS questions require careful consideration to encourage problem solving and deeper ongoing retention of knowledge. Carnaghan et al. (2011) suggested that SRS questions should be interspersed throughout the class; opportunity for peer discussion should be provided in answering the SRS questions; flexibility and variety should be allowed in the instructor questions and behavior used to explore the SRS responses; the aggregated response graph should be displayed; and SRS questions should be sufficiently difficult, so that students would need to pay attention to answer.

Use of SRS

Technology Description

SRS allows students to answer questions and get instant feedback in classes. Therefore, it can help promote active learning through peer instruction. Students can discuss in classes and learn from each other, and thus, it enhances students' engagement in large classes.

uReply has been deployed at the university of the author since the first semester of 2015/2016. It is a communication system for the use with any electronic devices which can access to Internet. Teacher can ask a question by using teacher's device and students can input their answers by using their own electronic devices, such as mobile phones, tablets, or laptop computers. The system is available to all current staffs and students at the university. It is a powerful and yet easy-to-use system that teachers and students can access to the system through Internet with their own university NetIDs and NetPasswords. Students can access the system through any smart devices which can gain access to internet (see Figure 1).

Teachers can create question banks before class or they can create question instantly during the class. To create a "Question Bank", teachers can select the "Edit Question Bank" icon to add quiz. Then, teachers can

enter the name for the quiz and add new item and input the name of the new item to create new question (see Figure 2).

To create questions instantly during the class, teachers can simply start a session and choose to create question and start polling instantly. Alternatively, teachers can also choose the question bank created before class after starting a new session (see Figure 3).
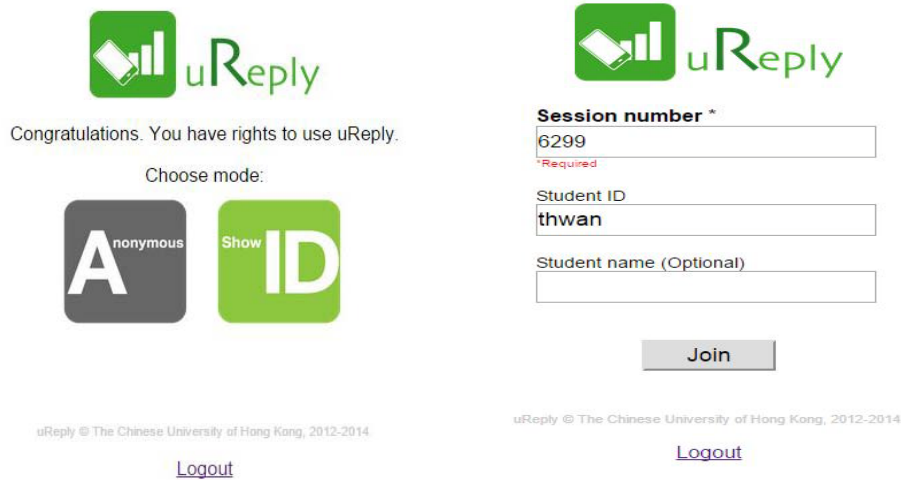

Figure 1. Sample uReply student login pages allowing students to choose using uReply anonymously or showing ID.
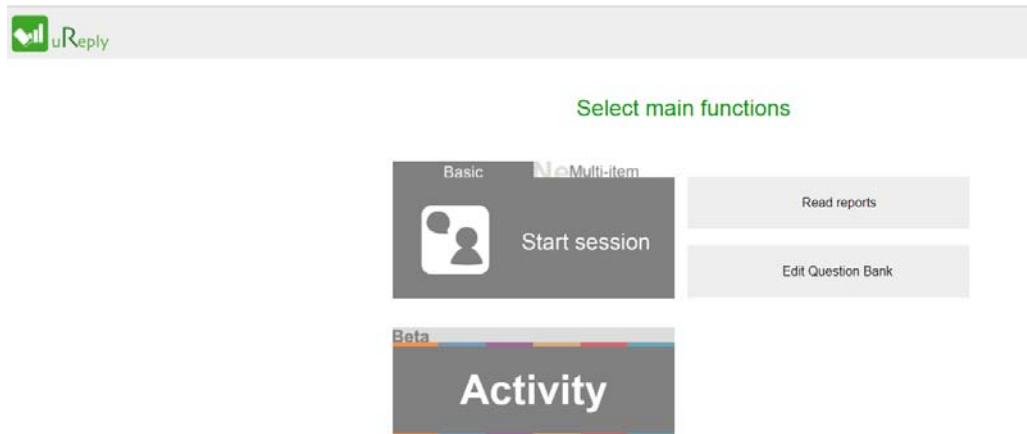

Figure 2. Sample uReply teacher homepage showing main functions that the teacher can use.
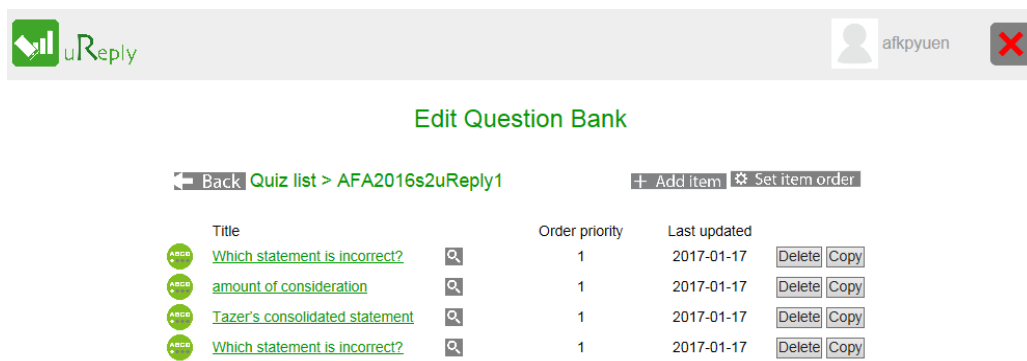

Figure 3. Sample uReply teacher homepage showing the way to edit question bank.

After the polling, teachers can select to end questions and results will be saved automatically. Teachers can show the polling results instantly during the class and discuss with the students (see Figure 4).
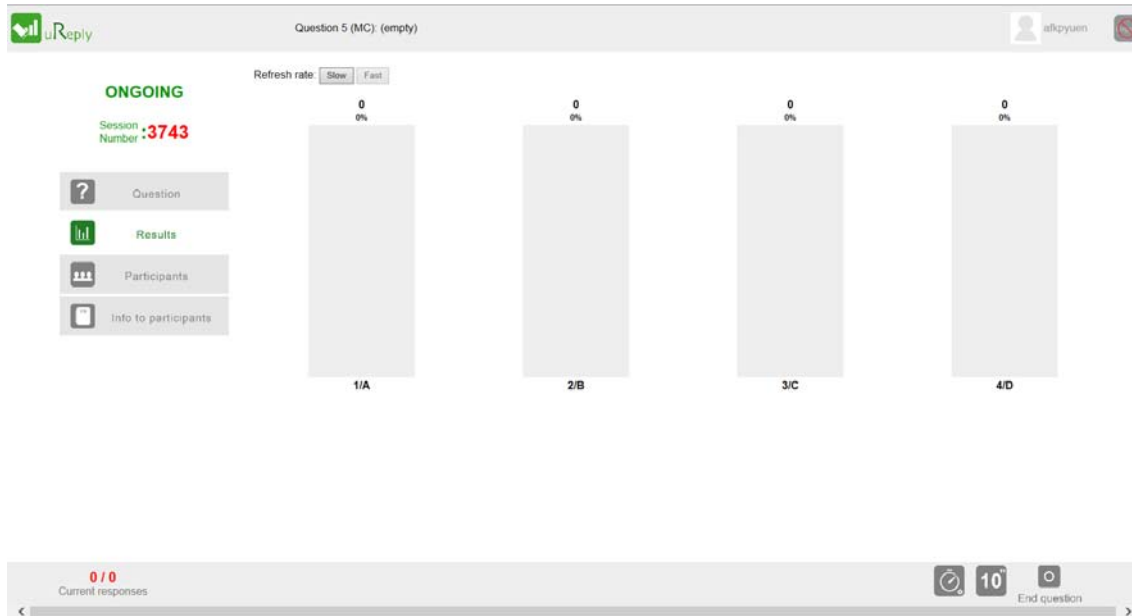

Figure 4. Sample uReply teacher homepage showing the polling results.

The saved statistics of the polling results can be retrieved and downloaded at any time by selecting the "Read Reports" function.

Application to This Study

The study was conducted over one semester at a public university in Hong Kong. The study population was the 2015 cohort of final year or penultimate year accountancy/accounting and finance students studying advanced financial accounting. The introduction of SRS in advanced financial accounting classes provided the opportunity to study the perception of using SRS in classes. This study also evaluates whether certain groups of students may have more positive perception on the use of SRS.

Out of a total of 13 classes in the study period, three classes were delivered with the use of SRS in class and the other 10 classes were delivered in the conventional format.

To facilitate students' understanding of the use of SRS, an email was sent to the students well before the class:

> Dear students,
> To allow instant response and facilitate a more interactive teaching and learning environment, a classroom communication system for use with electronic or mobile devices, uReply, will be used. In other words, I will ask questions and you would input your answers by using your own electronic devices, such as mobile phones, tablets, or laptop computers.
> (1) Please enter the session number when I tell you so in order to start a session;
> (2) Please login using your NetID and NetPassword so that I can keep track of your participation.
> Use of uReply
> With uReply, every student has a chance to participate in the class. Both teacher and students can check understanding of the class at various points of the lesson. Besides, it helps to collect students' feedback and questions.
> Regards

Based on the commonly identified benefits (Tregonning et. al. 2012), questionnaire consisted of nine questions was developed by using a five-point Likert scale (ranging from "Strongly agree" = 5 to "Strongly disagree" = 1). To understand whether the students' perception of using SRS may differ among students of different gender and background, three questions on the background of the students, i.e., gender (male *vs.* female), major (accountancy *vs.* accounting and finance), and origin (local *vs.* non-local) were also asked. Each student was asked to fill in a questionnaire two month after the completion of the semester to assess their perception of using the SRS during the class.

Results and Findings

Data and Descriptive Statistics

From a cohort of 120 final year or penultimate year accountancy or accounting and finance students who have used SRS in the classes, 40 (33.3%) students completed the student perception questionnaire. The results are summarised in Table 1.

A total of 85% of the students agreed that SRS facilitated active participation (Item 3) and 80% of the students felt that SRS increased their level of confidence to answer questions (Item 5) and allowed them to focus better on key points (Item 6). Seventy-seven point five percent of the students reported that using SRS stimulated their interest that they enjoyed participating in an SRS class and SRS increased their attention span. Seventy-five percent of the students agreed that SRS contributed to their understanding. In response to the statement, using SRS enabled me to gauge the knowledge of other students in the class, 72.5% agreed and 27.5% were neutral.

Table 1

Results of Student Perception Questionnaire

Scale		Strongly agree				Strongly disagree	Mean score
		5	4	3	2	1	
1	Using uReply stimulated my interest.	(7) 17.5%	(24) 60%	(6) 15%	(3) 7.5%	(0) 0%	3.875
2	uReply contributed to my understanding.	(6) 15%	(24) 60%	(8) 20%	(2) 5%	(0) 0%	3.85
3	uReply facilitated active participation.	(15) 37.5%	(19) 47.5%	(6) 15%	(0) 0%	(0) 0%	4.225
4	uReply is appropriate because it allows me to make mistakes.	(8) 20%	(21) 52.5%	(9) 22.5%	(2) 5%	(0) 0%	3.875
5	uReply increased my level of confidence to answer questions.	(9) 22.5%	(23) 57.5%	(7) 17.5%	(1) 2.5%	(0) 0%	4
6	uReply allowed me to focus better on key points.	(9) 22.5%	(23) 57.5%	(6) 15%	(2) 5%	(0) 0%	3.975
7	uReply increased my attention span.	(9) 22.5%	(22) 55%	(9) 22.5%	(0) 0%	(0) 0%	4
8	I enjoyed participating in uReply.	(12) 30%	(19) 47.5%	(8) 20%	(1) 2.5%	(0) 0%	4.05
9	Using uReply enabled me to gauge the knowledge of other students in the class.	(7) 17.5%	(22) 55%	(11) 27.5%	(0) 0%	(0) 0%	3.9
	Overall mean						3.972

Notes. Values used "Strongly agree" = 5 to "Strongly disagree" = 1.

The result of the questionnaire shows that students' perception is positive towards the use of SRS in classes, this agrees with prior studies (Teeter, Madsen, Hughes, & Eagar, 2007; Sprague & Dahl, 2010; Keough,

2012; Chui, Martin, & Pike, 2013; Rana & Dwivedi, 2015). A total of 80% or more of the students agreed that SRS facilitated active participation, increased their level of confidence to answer questions, and allowed them to focus better on key points.

The *t*-Test Result

To understand whether the perception of using SRS differs among students of divergent backgrounds, *t*-tests have been done to test for three characteristics of the students, namely, students of different major (i.e., accountancy *vs.* accounting and finance, female *vs.* male, and local *vs.* non-local).

Accountancy *vs.* accounting and finance. The author hypothesized that:

H 1: The perception of using SRS differs between accountancy and accounting and finance students.

With a two-tail test, if t Stat $> t$ Critical two-tail or t Stat $< -t$ Critical two-tail, the null hypothesis will be rejected. For Hypothesis one, this is not the case as the t Stat is not $> t$ Critical two-tail nor $< -t$ Critical two-tail ($-2.073873 < -1.20113 < 2.073873$). Therefore, the null hypothesis is not rejected. The observed difference between the sample means (3.904762-4.12963) is not convincing enough to report that the average perception of using SRS between accountancy and accounting and finance students differ significantly (see Table 2).

Table 2

The t-Test on Sample Means: Accountancy vs. Accounting and Finance

T-test: Two-sample assuming unequal variances		
	Accountancy	Accounting and finance
Mean	3.904762	4.12963
Variance	0.317068	0.284699
Observations	28	12
df	22	
t Stat	-1.20113	
$P(T <= t)$ two-tail	0.242472	
t Critical two-tail	2.073873	

Female *vs.* male. Allen (1986) found that there is a significant difference in academic performance, attitudes, and satisfaction between female and male students. Therefore, the author hypothesizes that:

H 2: The perception of using SRS differs between female and male students.

For Hypothesis two, the t Stat is not $> t$ Critical two-tail nor $< -t$ Critical two-tail ($-2.026192 < 1.51206 < 2.026192$). Therefore, the null hypothesis is not rejected. The observed difference between the sample means (4.082126-3.823529) is not convincing enough to report that the average perception of using SRS between female and male students differ significantly (see Table 3).

Local *vs.* non-local. In a comparative study of students' success in Black and White Institutions, Fleming (1984) found that students' engagement and performance are affected by students' nationalities and cultures. Thus, the author hypothesizes that:

H 3: The perception of using SRS differs between local and non-local students.

For Hypothesis three, the t Stat is less than $-t$ Critical two-tail ($-2.64477 < -2.048407$). Therefore, the null hypothesis is rejected. The *p*-value is $< 5\%$ and thus significant. The observed difference between the sample means (3.858238-4.272727) is convincing enough to report that the average perception of using SRS between local and non-local students differ significantly (see Table 4).

Table 3

The t-Test on Sample Means: Female vs. Male

	T-test: Two-sample assuming unequal variances	
	Female	Male
Mean	4.082126	3.823529
Variance	0.344801	0.242375
Observations	23	17
df	37	
t Stat	1.51206	
P(*T* <= *t*) two-tail	0.139014	
t Critical two-tail	2.026192	

Table 4

The t-Test on Sample Means: Local vs. Non-local

	T-test: Two-sample assuming unequal variances	
	Local	Non-local
Mean	3.858238	4.272727
Variance	0.33236	0.144108
Observations	29	11
df	28	
t Stat	-2.64477	
P(*T* <= *t*) two-tail	0.01325	
t Critical two-tail	2.048407	

The *t*-test results show that it is not convincing enough to report that the average perception of using SRS differ significantly between the accountancy and accounting and finance students and between the female and male students. However, the results show that the average perception of using SRS differ significantly between the local and non-local students. This may indicate that students' perception of using SRS may be affected by students' nationalities and cultures.

Conclusions

The fact that a total of 85% of the students agreed that SRS facilitated active participation (Item 3) and 80% of the students felt that SRS increased their level of confidence to answer questions (Item 5) and allowed them to focus better on key points (Item 6) leads to a conclusion that using SRS in a class is an effective teaching tool as it enhances students' participation and engagement. The positive students' perception of using SRS was encouraging.

The findings also show that non-local students perceived the use of SRS more positively than that local students perceived, which indicates that students' perception of using SRS may be affected by students' nationalities and cultures. Further researches may be done to understand the nationalities and cultures affects the perception of using SRS.

While this study reported that SRS could effectively engage students in class and enhance active learning, further studies may be done to investigate whether this active learning could enhance long-term retention of knowledge and deeper learning, so as to find out whether the use of SRS can help students to obtain a better knowledge gain.

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