

# A Proposal for Enhancing Students' Evaluations through an Adaptive and Progressive Digital Feedback System

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Students enrolled in a course are asked to complete an anonymous Student Evaluation Survey (SES) towards the end of the term that will provide the university with student feedback. The aim of the SES is to collect and use student feedback to enhance the overall design, delivery and outcomes as part course quality and enhancement processes. However, this traditional SES model is not without limitations. It has been observed that there has been a decline in response rate of SESs across universities risking insufficient sample sizes for meaningful and valid analysis. This coupled with their infrequent deployment, limited duration and inability to capture informal, time-sensitive feedback suggests that exploration into new ways of facilitating surveys is necessary. In this paper we present a work-in-progress collaborative project that proposes to augment traditional SES methods in a way that responds to the aforementioned limitations, reimagining SESs to include regular informal weekly engagement with students.

Keywords: Learning and Teaching; Adaptive and Progressive Digital Feedback System.

## Introduction

Many universities and higher education institutions are using online student course evaluation surveys at the end of the term to evaluate the quality of learning and teaching in the classroom (Anderson, Cain and Bird, 2005; Alderman, Towers and Bannah, 2012). Student evaluation surveys are the primary means by which most universities assess their faculty's teaching skills (Kozub, 2010; Simpson and Siguaw, 2000). With the growth of electronic means for information exchange and social media, teaching evaluations are now also becoming a publicly visible reflection of a university's quality of educational services (Estelami, 2015). The Student Evaluation Survey (SES) measures five aspects of a student experience: Skills Development, Learner Engagement, Teaching Quality, Student Support, and Learning Resources (SES National Report, 2017). However, it has been observed that there is a decline in response rate of the SES. The response rate for the 2013 University Evaluation Survey on students experience and satisfaction was 29.3%. Institutional response rates ranged from 50.5% to 17.9% (University Experience Survey National Report, 2014). There is evidence to suggest that there is an ongoing decline in survey response rates among Australian universities. As quoted by Nair (2017), "Six of eight universities have experienced a sharp decline in response rate (>18%)" (Graduate Careers Australia, 2014). With the rapidly evolving environment of Higher Education, the traditional online course evaluation survey may be obsolete as it does not provide real-time feedback and has limited utility with respect to adjusting learning and teaching resources within the term (Grant, 2014). Exploring new ways of administering surveys is sensible given declining survey response rates (Massey and Tourangeau, 2013).

Moreover, research indicates that there is a significant gap between teaching approaches and actual practices in higher education (Kim and Bonk, 2006). Attention has shifted from student experience to student engagement (Klemenčič et al., 2015) which conceives students as active partners in the educational process and as responsible for their own learning and formation (Taylor et al., 2011). To ensure continuous improvement of student learning, a requirement of Universities as detailed in the Higher Education Standards Framework (2015), universities would benefit from progressive and formative feedback in conjunction with the end of term SES to enhance courses and their delivery (Pugliese, 2016). These data-adaptive solutions need to be able to differentiate instruction at a personalised level of learning (Appleton-Knapp and Krentler, 2006), and allow students to own their learning journey through real-time response to their ongoing detailed feedback for self-mediation (Pugliese, 2016). The synergistic relationship between learning design and learning analytics has the potential to improve learning and teaching in near real-time (Ifenthaler et al., 2017). With the advancement in new technology and the universal use of digital media by students (Gardner and Davis, 2013), research is already underway seeking to adapt qualitative empirical methods to digital use, enabling canvassing of data on student experience on a large scale (Klemenčič et al., 2015), and facilitate more exploratory and innovative research in this area. To serve students better, the

higher education systems should develop student satisfaction monitoring procedures representing an emergent condition (Moler, 2006). Almost all universities have requirements that formal course evaluations be made (Alderman, Towers, and Bannah 2012). But, what about the informal? With the proliferation of online education in recent decades, the opportunity to capture informal and time-sensitive feedback, such as informal classroom discussions, has diminished (Svensson et al., 1999). Little has emerged within the sector to fill this void.

In this paper, a design is proposed for a new progressive and adaptive feedback model to resolve the issue of declining survey response rates and to improve the collection of meaningful, timely, and sometimes overlooked, informal student feedback (Svensson et al., 1999) that can be acted upon during term. This model is designed to receive informal, real-time, adaptive feedback from students during the term to satisfy students' learning needs and improve learning outcomes through student engagement. This will bring ownership and investment in learning from students and teachers, which in turn will establish a sense of equity and form a course design team.

The remainder of the paper discusses issues with existing online SESs and a proposed alternate model based on previous research, intervention design, research design and finally, conclusion and future work.

## Models of SES - Reimagined

There appears to be a consensus that student feedback helps to improve courses. Student feedback is helpful for teachers and learners to improve their learning and teaching (Klemenčič et al., 2015; Alderman et. al., 2012). Therefore, one of the important issues for improving learning and teaching is obtaining feedback for optimising the learning environment and learners themselves.

However, current models for SESs are not without issue. A significant limitation of traditional online SESs relates to their timing and frequency. Typically, the student evaluation survey is facilitated once per student, per unit of study, per term, where it is recommended that responses are solicited for a period of 3 to 5 weeks (Shah et. al., 2017). This blunt instrument swung once per term grossly inhibits a teacher's ability to be agile and responsive to student feedback during the term.

Svensson et. al. (1999) recognised this issue, and in response, developed the Course Barometer. The Course Barometer captured students' moods or attitudes at any time the student wishes to express it throughout the term. It achieved this using a simple web interface where students would select either a green or red rectangle connoting a positive or negative feeling. If they submitted the web form without selecting a coloured rectangle, the response was taken as neutral.

Jones (2002), continued the work of Svensson et. al. by introducing a commensurate service for his own teaching (and subsequently, faculty-wide at his institution) similarly called a Course Barometer. As part of Jones' (2002) first study, he detailed an instance in which the Course Barometer facilitated improvement to the student experience during the term. Issues about lecture quality were raised by students who at that time, were attending via video broadcast. Jones (2002) noted:

“Often problems such as this would have continued throughout the term with little or no change. However, in this case the problems raised were addressed in a variety of ways and from week 4 onwards the overall student feeling on the barometer was positive”.

Despite the potential for responsiveness to student feedback, and like traditional SESs, Course Barometers also suffer challenges in relation to student response rates with the Course Barometer (Jones, 2003). In his second study, survey responses from two different student cohorts collectively indicated:

1. Students were not holistically made aware that the Course Barometers existed;
2. Students didn't perceive any action or expected any action in response to the feedback that they provided via the Course Barometer

These factors among others are mirrored by more recent and holistic research (Shah et. al., 2016). Reimagining SES on a weekly basis must also consider these factors.

## Intervention Design

It's clear from the literature that a problem exists with existing SES instruments, and that a more adaptive approach is needed. Based on the literature review, this new system needs to be easy for students and teachers to use, quick to implement, and provide feedback that can be quickly actioned in a real-time fashion. For this reason, this paper is proposing an adaptive and progressive feedback system that can collect multiple forms of feedback (or data) from participants to support meaningful understanding of the course content on a weekly basis. An example of the feedback design which will be used in this study is shown in Figure 1. The Shareable Content Object Reference Model (SCORM) framework, which is supported by many Learning Management Systems (LMS) and eLearning authoring tools, can be used as a scaffold for the creation of bespoke content to facilitate this approach.

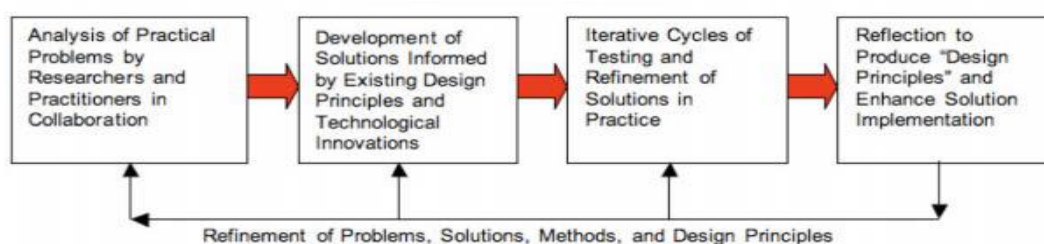


**Figure 1: Examples of Adaptive and Progressive Digital Feedback for Students**

The proposed system will be called the Adaptive and Progressive Digital Feedback (APDF) system. The APDF system will collect data for three dimensions (teaching and learning activities, institutional material base, and support services) whilst challenging students to be self-reflective and actively engaged with their learning journey. Not only does this approach promote responsive learning design and cater for future needs, but it also provides a mechanism to monitor the progress of the active student cohort and conduct timely interventions to enhance their learning experience. This philosophy is a paradigm shift from existing online SESs which are more concerned with the collection of feedback to improve the prospects for students on the subsequent course. By taking this approach it is envisaged that educators will demonstrate that they are not only committed to improving the quality of the learning journey for current students, but that they are willing to provide active pastoral care in a bid to maintain student engagement and combat attrition. The contemporary educational space is competitive, flexible and adaptive, so the content that exists within it should share the same characteristics.

## Research Design

Parker (2011) has shown how a design-based research (DBR) approach is being used to design and develop authentic e-learning within the higher education sector. It is an iterative research process which Reeves (2006) described as four connected phases and is shown in Figure 2. We will be using DBR methodology as the collected data will inform improvements to the APDF system and this will support multiple iterations which will be used in future, for instance over multiple terms where data collected, and lessons learned are incorporated into APDF for ongoing improvement.



**Figure 2: Four phases of design research (Reeves, 2006)**

This research approach is being used in education to investigate innovation using technology-based initiatives, because it “embraces the complexity of learning and teaching and adopts interventionist and iterative posture towards it” (Kelly, 2004, p. 105). The iterative phases required in our research are:

**Phase 1:** Analysis of practical problems: This requires us to select data sets to identify the problems. Often, teachers fail to create meaningful opportunities for interaction within their learning objects, creating a sense of isolation within the student cohort (Maor and Volet, 2007). The information students are not engaged with, what works and what does not work for them will be identified on weekly basis.

**Phase 2:** Solutions will be developed to the identified problems, which can then be implemented in the learning environment. This solution is an identified intervention which will be able to solve issues related to the timing and frequency of traditional Online SES. Details of the first iteration of this intervention are described above; this intervention will then be updated and modified in later loops of the DBR process based on student and staff feedback.

**Phase 3:** The solutions developed will be implemented as a design phase. Data will be collected and analysed to ascertain the effectiveness of the implemented solution. This study will utilise a mixed methods data collection to examine the impact of the APDF system on class participation and interaction for both online and face-to-face classes in a postgraduate and an undergraduate course. Quantitative and qualitative data will be collected from students enrolled in courses with the feedback system implemented. Data collected on the use of APDF can be compared with the data collected by the end of the term SES survey. A survey/interview will be conducted for the teaching team involved in teaching courses where these digital feedback systems will be used. Twenty teaching members across different locations have been identified. This research will use a variety of quantitative analytic techniques using Clustering (K-Means), and Classification (Decision Tree Induction) to generate insights about the APDF system. We will perform a t-test on the control and treatment groups.

**Phase 4:** Once the APDF system has been implemented, the entire project will be reviewed, with dissemination to the stakeholders and broader educational community. Design principles are fundamental to the conduct of educational design research (or DBR) studies. Design principles can be used to guide the design and development of learning environments in higher education that are based on sound practical and theoretical principles, and that can promote student engagement through innovative learning tasks. Reflections from this phase will also be fed back into subsequent loops of the DBR methodology in future studies (Herrington et. al., 2011).

## Conclusion and Future Work

The study has found that student feedback is perceived positively by universities. When conducted and utilised appropriately, student evaluations are a valid and reliable source of information for the enhancement of courses and learning and teaching practices. In this paper, we have reported on a work-in-progress proposal for the APDF system, concerned with building an adaptive and progressive feedback system to overcome the limitations of traditional SESs. The design phase will be iterative of our proposed APDF system and will be implemented in a form that can be used. As a designer we will test aspects of the educational intervention, or whether the educational intervention as conceived has achieved its goal. Once the design has been achieved, we will test our APDF system to collect feedback about the success of the design and the validity of the theoretical propositions. It will tell us whether the design has achieved its practical and theoretical goals.

The next step in the project is to test the conceptual design of our proposed APDF system.

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