

The effectiveness of early identification of 'at risk' students in higher education institutions.

Laetitia Cassells

Lecturer, University of Pretoria

Office 6-38 IT Building 6th Floor

University of Pretoria

Corner of Lynnwood street and Roper street

Hatfield

Pretoria

South Africa

0082

Telephone: (012)420 5041

Email: Laetitia.cassells@up.ac.za

Abstract

The application of formative assessment principles in higher education has become increasingly important in South Africa. In this case study the researcher assesses the effectiveness of the application of an early warning system to the higher-education environment in a high failure rate subject. This method is applied according to recommended feedback guidelines for formative assessment and self-regulated learning. Over the period of 3 years the collected data indicates that the subject affected the outcomes of the students significantly. Students who were at the highest risk of failure benefited the most from the application of an early warning system and corresponding tutorial classes to the subject which is in line with other formative assessment findings. The students participating in the 'At Risk' list achieved a summative grade on average 8% higher than the class average grade without the implementation of the early warning system and accompanying tutorial classes.

Keywords

Formative Assessment, At Risk students, Early warning system, self-regulated learning

Introduction

The introduction of an early warning system in education has been experimented with in both secondary and higher education systems around the world. In both environments the introduction of an early warning system to notify educators about the possible impending poor academic performance improved the performance of students at risk of failing the courses/classes offered (Beck and Davidson 2001; Balfanz, Herzog, and Mac Iver 2007). The application of these methods of early assessment of performance in South Africa would have particular benefit as we often have students from varying educational and academic backgrounds entering our higher education institutions, providing little equality in terms of entry assessment criteria at undergraduate level

(Warren 2002). These 'non-traditional students' are diverse in their education requirements, entry levels, and developed abilities due to the history on inequality in South African primary and secondary education (Warren, 2002). It is assumed in this case study that the students attending the classes (at second-year level) have met all the criteria for entry into the university and promotion from first-year. This implies that the students have acquired the basic skill set required to achieve the required outcomes of the subject.

The following article makes use of the application of formative assessment in the early warning of students at risk of failure in a second year Copy-Editing subject at the University of Pretoria, as part of a larger re-organisation of assessment and course materials to address student difficulties in the course. Data collected about the students at risk of failure, the failure rate as well as the ultimate performance of these students over 3 years is analysed in order to gauge the effectiveness of an early warning system as a part of formative assessment adjustments in course materials for students as a form of intervention in high-failure rate subjects. This approach was taken in order to apply more effectively the University of Pretoria's drive to outcomes-based, contextualized and integrated assessment, closely linked to the concept of 'Mode 2' learning as described by Waghid (2002). Fundamentally 'Mode 2' teaching practices require the implementation of formative assessment principles, which are often poorly implemented in stable-discipline fields, often heavily reliant on theoretical teaching. These stable-discipline fields rely on traditional summative assessment that is not directly problem-orientated (Warren, 2002).

Formative assessment has no tightly defined definition (Black and Wiliam 1998, 7), and is often seen as exacerbating the challenge between the accountability of assessment and the core assessment values (Black 2015, 163). However, dialogue about formative assessment application and practices is key in understanding student learning practices and the student-content relationship (Black and McCormick 2010, 494, 7) which requires more studies illustrating the application of formative assessment and its outcomes (Black and McCormick 2010, 493). The University of Pretoria

has embraced formative assessment processes throughout the University, embracing integrated, problem-orientated, outcomes based education that is in line with real-world requirements from the students in its teaching and learning policies. The implications of this approach is that the University of Pretoria is primarily concerned with assessments that are comparable to the performance that will expected from students in their chosen careers, thus ensuring that students learn the practical skills required to succeed in their chosen industry.

Assessment for learning is an integral part of formative assessment. According to The Assessment Reform Group (2003, 100) assessment for learning is a valuable method of improving learning and raising standards. The principles of assessment for learning and self-regulated learning were applied in this case study to improve student performance and the perceived value of the subject. Student perception of the value of a subject has been shown to have significant impact of the performance in that subject (Centra 1977, 20), primarily due to the role of motivation in academic performance. In order to improve the performance of undergraduate students it is important that the value perception of the student is thus taken into account. Assessment of learning, in contrast, can be seen as the traditional method of assessment, for summative, grading and reporting purposes (The Assessment Reform Group 2003). This type as assessment still plays an important role in higher education in South Africa to ensure that the National Qualifications Framework minimum requirements for various qualifications and their national and international accreditation are still met (Falchikov 2013, 3). Summative assessment methods are usually administrative in application, thus used for final assessments to determine promotion of the student. Formative assessment methods are used by the students themselves (Falchikov 2013, 4) to facilitate improvement, and are thus not generally administrative in function. Summative and formative assessments do not necessarily need to be mutually exclusive however (Black 2015, 163; William 2011), as can be seen from this case study, grade functions can be formative or summative, any grades that contribute to the final subject grades are considered in this case study to be summative (Sadler 2009, 808), this includes semester marks which allow entry into the examination and examination results

themselves. In addition to this traditional method of assessment, assessment for learning can be implemented through effective planning in order to obtain information about the progress of the student towards education goals (The Assessment Reform Group 2003, 101). Grades in both formative and summative assessment are used as the “consequence” to performance in a module or subject (Hattie and Timperley 2007, 81). Formative assessment tends to help low-achieving students more than higher-achieving students, and was thus particularly applicable to this subject, as will be discussed in the research context (Falchikov 2013, 4).

In combination with the application of formative assessment principles the self-worth theory of achievement motivation was used to encourage self-regulated learning. Self-regulated learning is manifested in the active monitoring and regulation of the learning process (Nicol and Macfarlane-Dick 2006, 199) resulting in more frequent interaction with student grades and performance from both students themselves and the lecturers, leading to formative assessment. This theory proposes that the perception of abilities are central to positive self-identity, and that the protection of the sense of worth is paramount to the development of self-worth (Covington 1984, 12). This theory relies on the comparisons in early life forming a developmental basis for normative assessments later in life (Covington 1984, 16). Feedback produced in the process of formative assessment is then used as a catalyst for self-regulated learning (Butler and Winne 1995, 246), in order to develop this perception of ability. Self-regulated learning in this instance is the engagement of the student in the monitoring, goal setting and knowledge accumulation in the learning process (Butler and Winne 1995, 254), in contrast to the traditional passive and receptive role of the student. The student participation in goal selection is key to self-regulated learning, as it provides the freedom of goal setting based on perceptions of and desired performance, providing further motivation (Butler and Winne 1995, 267). The discrepancy between the reality of performance as indicated through formative assessment and the desired outcome of the student then produces action that would influence the final, summative grade of the student (Butler and Winne 1995, 270). In higher education subject facilitators (lecturers) are charged with the creation of an environment that is

conducive to student empowerment, as long as the national and institutional curriculum requirements are still met (Hawe and Dixon 2016, 1). The implication of self-regulated learning principles are key to the successful application of assessment for learning, or formative assessment. In order to provide an encouraging environment for both assessment for learning and self-regulated learning it is imperative that the students have a clear concept of what is expected, an example for comparison and the opportunities for the development of quality in tasks (Hawe and Dixon 2016, 2,4). It is in the last requirement that the principles of formative assessment, assessment for learning and self-regulated learning intersect.

Research context

Copy editing, or PUB 210 has been offered at the University of Pretoria since the inception of the Bachelors of Information Science (BIS) Publishing programme in 2000. The module falls under the Publishing studies section of the Information Science Department. The BIS Publishing degree is primarily orientated towards the training of content management professionals in Publishing of all formats. The degree focuses on the commissioning, development, marketing and production of materials for specific audiences in a multitude of formats, including books, magazines and digital platforms.

The module composition was primarily focused on teaching copy-editing skills such as editing, proof reading, and language proficiency. A theme in the module focused on copyright law and legal responsibilities of editors. Traditionally the module has been assessed through a series of submitted practical exercises through the semester, a theoretical examination and semester test and a single submission of a traditional hard-copy edited manuscript. Aside from the practical exercises no continuous assessment was performed and the narrowly structured nature of the assessments left little space for student-centred assessment, nor did it meet the requirements for industry-related assessments completely based on the class composition.

The class composition has traditionally been an estimated 60% BIS Multimedia students, and 30% BIS Publishing students for whom the subject is a fundamental module, and 10% BIS Information science and other students who take the subject as an elective in their respective degrees. Culturally the class consists of a large majority of White students, with approximately 20% of students representing other races. As such the dominant first language in the class is English, followed by Afrikaans, and then other African languages. Historically a small percentage of Asian languages have also been represented. Common cross over in students taking the as a voluntary elective occurs with the humanities, specifically language studies.

The module PUB 210, Copy editing, at the University of Pretoria was audited in 2012 as part of a routine re-evaluation when a new subject-coordinator was introduced. Several problems were identified. The subject had an unacceptable failure rate of between 15-20% per semester, a large problem with attendance and was generally seen as not useful to the larger majority of the class, the BIS multimedia students. Through discussions and interviews with previous students who have completed the subject it was determined that the lack of attendance and general non-dedication of the class due to not engaging was responsible for the high failure rate and low class average, in line with findings by Centra (1977) that the attitudes of students can play a large role in their academic performance. This situation contributed to greater overall cost to the university and the subject as student retention is easier and cheaper than new student acquisition (Braun and Zolfagharian 2016, 969). In order to address this problem the content of the subject was altered and the early warning system or "At Risk List" was introduced.

Content and assessment alteration

Despite the subject falling under the BIS Publishing division of the department of information science the majority of the class were BIS Multimedia and BIS Information science students, due to comparatively small enrolment numbers in the BIS Publishing degree. The re-evaluation of the content of the subject was primarily concerned with making the subject more appealing and

relevant to the students who would not be expected to perform editing as part of their activities in their future employment, whilst still providing the necessary skills to the BIS Publishing students to perform editing on their graduation. The requirements upon graduation of the BIS Multimedia and Information Science students would be the ability to curate, assess and develop content. The BIS Publishing students would be required to perform the editing of content as well. The alteration of subject content for maximum skills representation was achieved by retaining all the elements of the subject as is, and simply re-prioritising and expanding on the elements that offered the skill set relevant to the largest amount of students. This included the development and assessment of digital content, content creation for marketing purposes (such as back cover blurbs), the legal aspects of content creation and use and Plain Language Editing – which is taking on growing importance in the development of information access in a language and educationally diverse South African information landscape.

The changes in subject content planned for more opportunity for formative assessment, and assessment tasks were incorporated that represent future career and performance expectations of each of the student groups (Multimedia, Publishing and Other), as well as allow for long-term interaction with content (Carless 2007, 59). Curriculum based assessment, as an aspect of formative assessment, requires the assessment to reflect learning aims (Black and Wiliam 1998, 44). In this the subject was inadequate, as the outcomes – thus assessment of the subject – did not provide for the accurate representation of the required learning outcomes of the larger portion of the students. Greater focus was placed in the reorganisation of the content on the copyright and permissions sections of the subject material, as well as Plain Language editing skills as these offered the most universal skill set to the class environment. In addition to this the weekly practical component of the subject was updated to include more relevant examples such as web editing, new editing practical exercises from contemporary book sources such as *Dexter* and *Game of Thrones* and a larger component of Plain Language editing, this frequent assessment was integrated more into the theory component of the subject material as it leads to higher performance as the student is consistently

and regularly given feedback and corrected (William 2011, 4). The final practical assessment was also altered to offer a broader set of options, including Plain Language editing and developmental editing where there was only traditional editing before, in order to appeal to the larger skill set of the class. This variety of practical assessment would not only assess the ability of the student to perform the skills required of an editor (in the traditional editing assignment), but also of a content developer (in developing content according to a provided specifications in the developmental editing project) and content curator (by requiring students to adapt existing content to a new audience in the Plain Language editing project).

This specifically allowed multimedia students to achieve based on implementation of skills already acquired in their degree. Kahl (2016, 2) found that multiple assessment options accommodate multiple learning styles, and thus affect a students' sense of control. This sense of control is central to self-regulated learning motivation (Nicol and Macfarlane-Dick 2006, 205), and thus forms an important aspect of formative assessment. This change in the final summative practical assessment also allowed for the introduction of more "authentic" assessment, meaning assessment for learning conducted in 'real world' tasks (Swaffield 2011, 434) that would be expected of the Multimedia and Information Science students upon graduation as well. This allows for the development of task-orientated goals for the mastering of new skills and understanding (Swaffield 2011, 438), which contributes to the goal setting-requirement of self-regulated learning.

A normative assessment model relying on self-regulated learning must take into account the importance of student motivation (The Assessment Reform Group 2003, 101). Through the introduction of new, more relevant practical exercises and re-focused class content a greater level of student motivation was achieved. Disregarding student motivation (the "I just don't care" comments) and capacity ("I can't spell") the primary complaint was that students were unaware of their poor performance. This content alteration resulted in higher rates of class attendance and affected the class average, but the same amount of students were failing the subject entirely or not

gaining examination entrance. The students who were completely failing to meet the criteria for subject complement were thus continuing to do so, indicating a misalignment between required subject outcomes and student abilities.

Early warning

Regardless of the students' possession of all the relevant marks of which their semester mark was compiled, it was determined that the students themselves were incapable of judging their performance objectively, and thus self-identifying their risk of failure, due to the following factors:

- 1) Being unaware of the individual mark weightings in the final mark, or unable or unwilling to calculate it properly.
- 2) Being unable to objectively assess their abilities to improving their marks, and
- 3) The misplacing, or losing of work, and thus the marks acquired.

This was in contradiction to one of the key principles of formative assessment, the development of the students' capacity for self-assessment, managing and reflection (The Assessment Reform Group 2003, 101). The principles of formative assessment were already being applied to the subject in the form of systematic evaluation of specific skills in the practical component through weekly assignments and the repeated evaluation of theoretical knowledge in the form of class tests and a semester test (Black and Wiliam 1998, 42). All of these marks were provided to students within 3 weeks of completion, as per the University of Pretoria guidelines.

The amount of feedback received in the form of marks and the complexity of the weighting of the theoretical and practical components was identified as one of the problems affecting students' critical self-evaluation capabilities. Despite the availability of tutors for the subject and the division of the practical classes into manageable class sizes of 20-30 students the failure rate was still deemed too high (17%) and the class average too low (below 50%). In order to overcome the problems presented by the subject content, composition and the class sizes and 'early warning

system' was developed in the form of the class "At Risk List". This list was compiled of students who were at risk of failing the subject, with an average of below 50%, as calculated from practical and theoretical assessments in the middle of the semester. The same grade system was used as is used for their summative assessment as this is known and understood amongst the students, grades are a common vocabulary with an associated value (Sadler 2009, 810). Artificially creating a goal for the student in 'I need to pass this class' encourages self-regulated learning and allows for the adoption of strategies to perform better in the class (Sadler 2009, 810; Butler and Winne 1995), as well as discussion about the learning process (Nicol and Macfarlane-Dick 2006, 210). The inclusion of feedback communications in the form of comments have not been found as effective at eliciting an effect on future performance as this 'realistic' view expressed in the common currency of grades.

The list is compiled after the theory-based semester test and comprises the same weighting as the final module mark, thus representing an accurate portrayal of the individual students' capabilities and current position in the class as it includes the same assessment elements and ratio as the summative mark the student can expect from the subject. This prevents assessment from motivating uneven effort and performance in the subject by only focusing on improving theory or practical grades, as well as providing timely feedback that is early enough for the students to use in order to motivate goal setting for the summative assessment (ArchMiller et al. 2016, 10). This additional and representative feedback, beyond the feedback that the students had already received encourages self-regulated learning (Butler and Winne 1995, 268). This method of assessment locates the learner in relation to the objectives set for the subject and is thus a valid form of formative assessment (Butler and Winne 1995, 273; Black and Wiliam 1998) and motivation for self-regulated learning. The "At Risk list" is not intended to be used for any evaluation of the student performance, it is thus a purely formative assessment, but contributes to the frequency of assessment needed for effective formative assessment (Black and Wiliam 1998, 44).

Due to student privacy concerns and the delicate nature of the list only the student numbers appear on the list released to the students after the semester test is completed. Sensitive and constructive feedback is one of the guiding principles for formative assessment (The Assessment Reform Group 2003, 101), as the public announcement of non-achievement can have great effects on students' motivation. The students are informed of the list and its function in the introduction to the subject, and reminded prior to the semester test. Once the list is released extra non-compulsory tutorial sessions are held lasting 2 hours, twice a week. The non-compulsory nature of the classes allow for the non-motivated student to not attend these classes. The benefits of non-integrated academic support programmes in the form of voluntary tutorials to the non-traditional or previously disadvantaged student was identified by Warren (2002). The benefits of these classes being non-compulsory avoids the stigmatization of poor performance, while providing a framework for motivated students who embrace the self-motivated learning process to improve their academic performance. The help offered in these classes was both theoretical and practical. The sessions were student driven, based on needs identified by the students themselves. The main purpose of feedback in formative assessment specifically is the bridging of the gap between the objectives of the subject and student performance (Hattie and Timperley 2007, 86; Black and McCormick 2010) by reducing the gap by encouraging increased effort from the student (Hattie and Timperley 2007, 86) this supports the foundation of self-regulated learning and formative assessment. The non-traditional nature of the undergraduate student body in this subject creates an environment where borderline performance is common, leading to many first-year intervention subjects attempting to provide bridging skills to new undergraduates (Warren, 2002). This is the reason that the primary tutorial classes were often not enough to provide the needed skills to the poorer performing students.

The classes are run entirely by the tutorial staff employed as assistants in the traditional practical sessions. Undergraduate students who have passed the subject and performed extremely well are considered for this position assisting the lecturing staff in class and with marking of practical

assessments. This was deemed appropriate as many students were uncomfortable with “criticizing” the theory or practical lecturers, or seeming “stupid” to the lecturer. Tutors are considered more approachable, more as peers. Tutors have been established as highly effective teaching tools when used in conjunction with well-planned formative assessment (William 2011, 4). The interaction between content creators and students is considered a primary foundation of effective learning. The tutorial classes overcame deep-set cultural traditions of passive and respectful class behaviour that some of the students displayed (Black 2015, 167).

The smaller class sizes and more informal nature of the environment encourages discussion about learning goals, dialogue about learning processes and objectives, The classes were also open to the students not on the at risk list to allow for greater class participation, specifically regarding the practical assignment for the end of semester, which counts for 30% of their semester mark. These students attended sporadically, and did not always sign the register on attendance as they were not represented on it, so a longitudinal assessment of the influence of these extra tutorials on their performance in the subject would not be reliable at this time. The attendance of the tutorial classes also allowed for further alignment between educator and student goals, as general feedback provided to a class can be difficult to interpret and apply contextually for some students (Nicol and Macfarlane-Dick 2006, 202,10).

Comparison to similar international programmes

This program of student-led tutorials is similar to other programmes offered at international universities. Specifically the Supplemental Instruction (SI) model developed at the University of Missouri (University of Missouri 2017). The SI model has been adapted for use in Australia as the Peer Assisted Study Sessions (PASS) programme (University of South Australia 2017) and is offered widely throughout Australia. The primary difference between the SI and PASS programmes are that the PASS programmes are student-led, while the SI programmes are led by specially trained facilitators. The closest comparison to the ‘At Risk’ list discussed here would thus be the PASS programme, with some differences in implementation.

The SI programme is a specifically non-remedial programme offered on courses that have historically high failure rates to students who do not necessarily exhibit poor academic performance (University of Northern Iowa 2017). The 'At Risk' list in contrast specifically identifies students who are underperforming in the course, and can therefore be considered a remedial programme. Both the 'At Risk' list and the SI programmes are peer-led, out of class sessions to facilitate student performance (University of Northern Iowa 2017). The PASS programme is offered in specific periods (for example 13-30 June) and covers course material in bulk, this would provide valuable opportunity for students to exchange materials, prepare for assessments, and ensure the comprehension of material (Federation University Australia 2017). In contrast the 'At Risk' list is a continuous programme that offers assistance in comprehension of material and the development of assessments throughout the semester, in cooperation with the lecturer to develop relevant practical exercises. This is considered more suitable to the remedial nature of this programme, offering academic support throughout the semester to academically vulnerable students to ensure student retention.

Findings

The "at risk list" was implemented in 2013 without the additional tutorial classes and contained 31% (22/72) of the class. Ultimately 17% of the class did not meet the minimum examination requirements and 3% deregistered for the module before the final exam. This was likely due to the incomplete application of formative assessment principles. Although the students were made aware of the requirements of the subject, as well as their failure to meet these requirements, no further communication was made in terms of corrective action, explaining subject objectives and feedback or providing exemplars of acceptable work. The following year these final steps of the formative assessment process were applied.

In 2014 the additional tutor classes were started and 41% (36/87) of the class was on the "at risk list". Ultimately 9% of the class was not allowed into the exam, while 1.1% deregistered. An improvement of 8% of students who failed the subject before the examination was evident with the

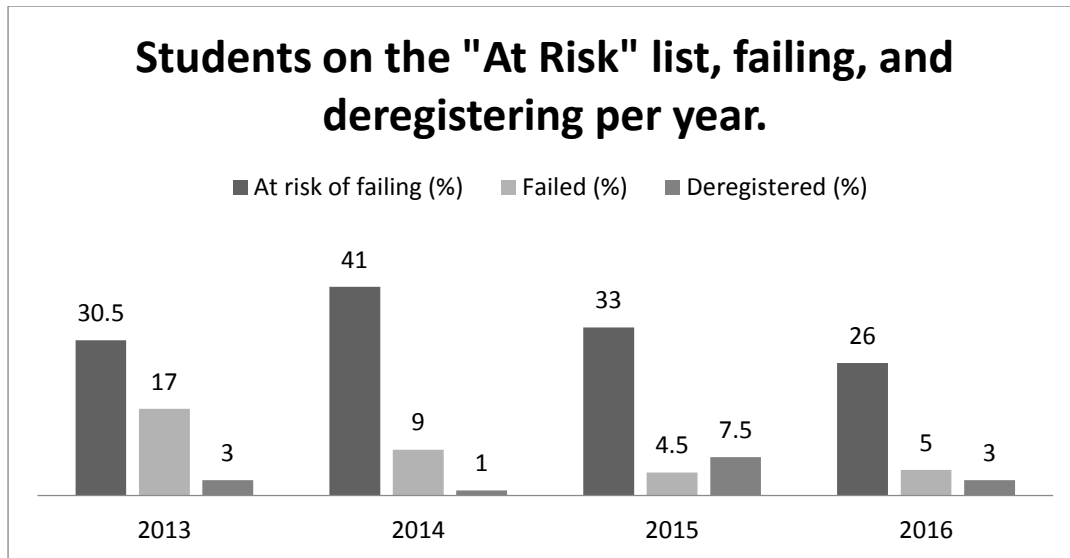
introduction of tutorial classes. This is due to the importance of interpreting feedback, discussing learning objectives, providing regular feedback and other elements discussed above (Nicol and Macfarlane-Dick 2006; Black 2015; Black and McCormick 2010; William 2011). As the examination represents a final, summative assessment for largely administrative purposes post-examination performance was not considered for this study. The improvement continued in 2015 and 2016. In 2015 33% (22/67) of the students were at risk of failing the subject, while in 2016, 26% (20/78) were. Ultimately the failure rate for the subject was 4.5% and 5% respectively.

Throughout this period the assessments for the subject remained identical, including practical to theory mark proportions, theoretical assessments and practical skills assessments. This implies that the year-on-year improvement in students included on the “At Risk” list could be attributed to 3 factors: Firstly that students are more aware of the list and the requirements of the subject as the subject progresses with this form of assessment in place. As students pass the subject and continue on with their degree programmes they communicate the purpose of the list to their peers. There is also increased awareness of the ‘At Risk’ list among faculty as the results of the implantation is discussed and presented to colleagues.

Secondly the lecturer could become more attuned to the requirements of the subject, and apply these more effectively to the judgement of ‘borderline’ cases for inclusion or exclusion to the “At Risk list” – this research thus would lead to more effective learning facilitation. The repeated exposure to students who are academically vulnerable in the course indicates to the lecturer areas in the course material that can be improved upon, either to be more understandable or by adjusting how the material is presented.

Lastly the application of interventions could have improved over the years, in the form of the tutorial classes and student motivation interventions from the lecturer. Again, the repeated use of the ‘At Risk’ list indicates to the lecturer what type of interventions, practical exercises and additional motivation is most successful in assisting academically vulnerable students. Figure 1

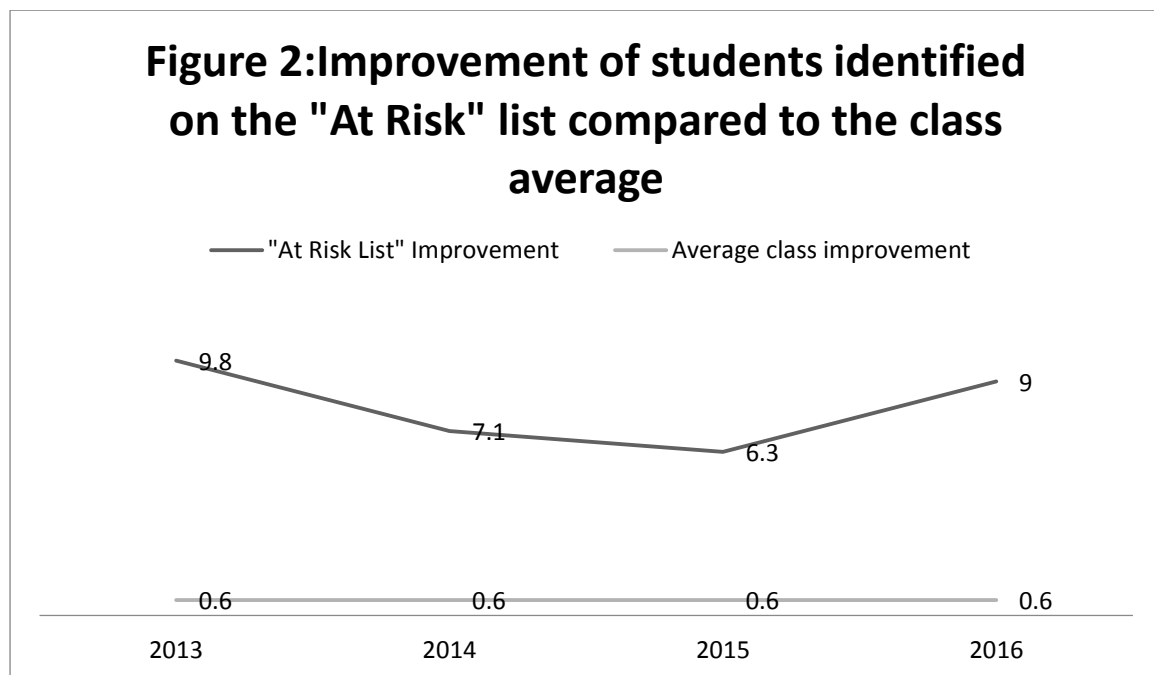
illustrates the amounts of students captured on the “At Risk” list, deregistering, and failing the class per year.



The system of identifying student at risk of failure was obviously not enough in isolation to affect failure rates as seen in 2013. The introduction of the additional tutor classes greatly impacted the failure rate of the subject, regardless of their non-compulsory nature which supports the findings of William (2011, 20-1). The failure rate of the course prior to the implementation of this programme was between 15-20%, the inclusion of the ‘At Risk’ list thus showed a significant improvement. The “At Risk list” was also very effective at identification of students at risk of failing, as only 4% of students who failed the subject in 2013 were not identified on the “At risk list”, with 1% not identified in 2014, and 1.5% in 2015. In 2016 all the students who ultimately failed the subject were identified in the “At Risk list”. The benefit to the tertiary educator in the early and accurate identification of students who are at risk of failure is the possibility of intervention in manageable class sizes, through for example additional contact time, extra credit assignments or student motivation exercises. The use of formative assessment allows for the adjustment of grading criteria, classes and feedback based on continual feedback on student understanding (ArchMiller et al. 2016, 11; Swaffield 2011). This feedback can also be used as prospective criteria, affecting the future goal

setting, teaching methods and grading strategies of the educator (Grainger 2015, 10-1) (Nicol and Macfarlane-Dick 2006, 214).

A further consideration of the early identification of students is the required increase in performance required of the students, and their awareness of this requirement. The performance of each years' grouping can be identified by comparing their 'mid-semester' mark calculated for the "At Risk list" with the final module mark that they entered the examination with. This performance can then be compared with their examination performance as well. The average improvement for students included on the "At Risk" list in their semester mark before exams (as compared to their mid-semester marks) in 2013 was 9.8%, in 2014 7.1%, in 2015 6.3% and in 2016 9%. This can be contrasted to the average class mark for students not on the "At Risk" list, which increased from the mid-semester mark by 0.6%. Figure 2 contrasts the average improvement per year of students identified on the "At Risk" list to the average improvement of the class average.



The addition of the student on the "At Risk List" thus affected their performance drastically. Through the identification and communication of their risk of failure the majority of the students who would have failed the subject were able to adjust their mark by an average of 8%. This increase can be seen

as the result of a combination of immediate and considered feedback. Task feedback (tests, practical assignments) are provided as soon as possible, while the processing of tasks feedback (the overall student performance in the form of the at risk list) is most beneficial if delayed (Hattie and Timperley 2007, 98).

Discussion

It is widely considered that grading is over-emphasized in the modern higher education curriculum (Black and Wiliam 1998, 18). The implementation of an evaluation grade such as one proposed in this case study does not increase the grading (or assessments such as tests, providing a summative grade) of students as it is not considered summative. However, the discontinuity between summative and formative assessment that remains in higher education is increasingly problematic, and should be addressed (Black and McCormick 2010, 498-9; Black 2015). As can be seen, implementing an early warning system does not negate summative assessment, but serves as a form of formative assessment nonetheless. The formative nature of the assessment comes from the function. The nature of the assessment as non-summative, thus not contributing to a final grade or assessment renders it formative in that it can affect the outcomes of the summative assessment – as can be seen in the improvement of the final pre-examination grade of identified students by an average of 8%. This formative assessment also provides further guidance on the required outcomes of the subject, feedback on the progress of the student, and tools for self-regulated learning. This is in line with the description and requirements of formative assessment as described by Hawe and Dixon (2016), Butler and Winne (1995), and Nicol and Macfarlane-Dick (2006) and prescribed in the University of Pretoria's teaching and assessment principles.

Implementing an at risk list in any group size can be done relatively easily and at no additional cost at the University of Pretoria using the tools already available to staff, such as the Grade centre on the Blackboard system. An initial once-off time investment at the beginning of the semester in the creation of calculated columns on grade collection sheets would avoid time monopolization later in

the semester. The global movement in larger class sizes towards easily gradable systems can thus be supported by introducing a system such as this (ArchMiller et al. 2016, 1). This would actively avoid the other major complain in all levels of education, the overload of assessment, especially where formative assessment is introduced (Black 2015, 174). The implementation of the early warning system requires very little additional time from the lecturer. The implementation of the 'At Risk' list is thus easily sustainable in most higher education institutions and would serve as an extra formative assessment element to students. As can be seen from the data here though, in isolation the 'At Risk' list alone does not have a large enough remedial effect to be valuable to academically vulnerable students – as was needed for this subject.

The findings of this early warning system furthermore delivers highly actionable and quality information about learning, as well as information that can teach and shape learning, some of the principles of good feedback as described by Nicol and MacFarlane (2006, 214). This information can impact a specific semester, in the approach that lecturers take to teaching future content, or re-examining content already taught. It can also influence the methods in which the module/information is taught in future, as well as offer comparative measures for quality, comprehension and standards across multiple semesters and years. Grades are considered a common currency across student levels, countries and subjects, therefore the grades produced by this subject offers valuable insights into the effectiveness of the teaching methods employed to better the student experience (Swaffield 2011, 435).

This adjustment of teaching in terms of the level of achievement of the student is one of the major benefits of assessment for learning (Swaffield 2011, 435), providing the opportunity to adjust the approach to content, assessment and learning to benefit the student. Feedback of this form has a forward-reaching effect (prospective orientation) in the way that it effects the future teaching and assessment of a subject (Grainger 2015, 4).

Cost implications of the 'At Risk' list implications

In terms of other costs the costs associated with additional tutor hours must be considered, especially in the current South African higher education environment, where fees and funding is a highly politicised topic. Globally the need for Universities to cut costs wherever possible is also well-known, the international higher education industry is not likely to consider a costly programme feasible. It can be noted however that the majority of large subjects at the university already have tutors assigned to them, the University of Pretoria for instance, generally ascribes to a tutor for every 30 students in a highly practical course, and a tutor to every 50 students in a theory-driven course. An additional 2 hours per week is easily accommodated by most departments when compared to the potential financial losses through student failures and drop-outs when considering the cost of new student recruitment, marketing and the implications of large amount of dropouts on the needed staff numbers. With an average 14 week semester, the total appointed hours are 28 – considering the hourly fee for student employment the cost is lower than expected.

The possibility of using student volunteers as peer mentors can also be explored. The use of mentor programmes to benefit mentors and mentees in the higher education industry has been well established. To this end, for course credit, references, or recommendations there may be volunteer students who are willing to act as mentors to academically vulnerable students.

Future implementation

The future of the “At Risk list” will address the 2 remaining major problem areas identified in the subject: the language barrier of the material and the skills of the students.

In South Africa the 11 official languages pose a difficult situation to language educators. Although the majority of students list English as their first language, it does not necessarily represent their home language – in which they would usually be most proficient. The students who do not have English as a first language can often also be overlooked due to their low numbers per African or international language. It is simply not feasible for the university to offer a separate class for the 2 Tshivenda or Mandarin speakers in a class. Language barriers are of significant concern in a subject

such as Copy editing where so much of the content is based on language skills. In future the subject would like to introduce practical assignments in African languages along with the already presented English and Afrikaans. However, until this is feasible, making tutors who are fluent in African languages available in the extra classes to explain and contextualize the work will be the first priority.

The primary and secondary education in South Africa presents another problem for the subject. There is no guarantee that the curriculum is applied in identical ways across the country, or even within a province. The influence of historical wealth patterns and institutional discrimination has affected the quality of education in both public and private schools, creating an uneven knowledge distribution and a non-traditional student body, as described by Warren (2002). This is especially true in languages, as mother-tongue education is still not a reality for the majority of South African learners. In terms of skills there is a real problem with people with learning limitations, such as dyslexia, but also those who did not receive a proper grounding in language in the basic education phase. Part of the further development of this programme would be to make additional assistance available to the students in the tutor classes to overcome this initial setback. Further research into this 'At Risk' list will focus on the degree of influence of this early education foundation's influence on academic performance in this subject.

Conclusion

The 'At Risk' list model is easily implemented in a variety of class sizes, regardless of the structure of the module. The findings above show that it has the potential to be of great benefit in a formative and self-regulated learning environment, specifically to poorly performing students, which supports the findings of Falchikov (2013, 4). The understanding of feedback as a catalyst for development in self-regulated learning has been well established (Butler and Winne 1995, 246), the findings of this study thus simply provides an additional model for formative assessment in higher education.

In this specific case the implementation of an early warning system as a form of formative assessment increased class attendance, examination entrance, lowered drop-out rates and failure rates. When we as higher education educators are charged with creating an environment that is conducive to achievement and empowers students, it makes it necessary for us to respond to the needs and requirements of the students. The early warning system discussed above provides a demonstrably successful method of intervention.

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