

Student engagement and assessment: promoting student learning across all levels of Bloom's revised taxonomy

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Abstract

This article seeks to report on the design, delivery and assessment of a first year undergraduate module in developmental psychology, as delivered by one lecturer to a large cohort of over 400 students undertaking an initial teacher education programme in an Irish university. In designing the module, the lecturer sought to place particular emphasis on promoting high levels of student engagement, coupled with broad levels of student learning across all domains of Bloom's Revised Taxonomy of Educational Objectives (Anderson & Krathwohl, 2001). A range of formative, summative and self-assessment strategies were employed with students across the module. Based on a review of students' online engagement, students' in-class attendance and students' performance across assessments, the strengths of the module are recognised. In particular, these relate to high levels of student engagement and broad levels of student learning across Bloom's Revised Taxonomy, with notable linkage for students between psychological theories and practice. Strengths and limitations of the module are outlined, with reference to implications for practice.

Keywords: *Developmental psychology; theory to practice; teacher education; student engagement; Bloom's revised taxonomy*

1. Introduction

In recent years, higher education has witnessed increased emphasis on the centrality of student engagement in the teaching and learning process. Underpinned by a plethora of research, student engagement in higher education is now recognised as an essential factor in predicting student learning, personal development and professional capacities (Bodnar & Clark, 2014; Carini et al., 2006). A review of the literature related to student engagement highlights the dual nature of this phenomenon. On one hand, student engagement is viewed as student-dependent; based on the extent to which students actively avail of opportunities to involve themselves in educationally-beneficial activities. In contrast, student engagement is also institution-focused, such that it is highly dependent on the extent to which institutions enable, facilitate and encourage students to engage in pedagogical material (Irish Survey of Student Engagement [ISSE], 2019). Most recently, the link between student engagement and assessment has been emphasised. Specifically, research shows that assessment practices can serve to facilitate or hinder student engagement, influencing what and how students learn, as well as the depth of student learning (Griffin & Howard, 2017; McMahon, 2006). Holmes (2018, p. 24) argues that assessments should seek to promote “deep” approaches to learning, such that students engage with tasks meaningfully with a focus on understanding underlying theories and principles. This concept of ‘deep’ versus ‘surface’ level learning relates strongly to *Bloom's Revised Taxonomy of Educational Objectives* (Anderson & Krathwohl, 2001). This taxonomy presents a framework for aligning learning objectives, curriculum, and assessments, whereby the taxonomy moves from lower order to higher order thinking skills. These include remembering, understanding, applying, analyzing, evaluating and creating. Table 1 presents an overview of the structure of the cognitive process dimension of the revised taxonomy, as adapted from Krathwohl (2002).

Table 1. Structure of the Cognitive Process Dimension of the Revised Taxonomy, as adapted from Krathwohl (2002)

1.	Remember	Retrieving relevant knowledge from long-term memory	1.1 Recognizing 1.2 Recalling
2.	Understand	Determining the meaning of instructional messages, including oral, written, and graphic communication	2.1 Interpreting 2.2 Exemplifying 2.3 Classifying 2.4 Summarizing 2.5 Inferring 2.6 Comparing 2.7 Explaining

3.	Apply	Carrying out or using a procedure in a given situation.	3.1 Executing 3.2 Implementing
4.	Analyze	Breaking material into its constituent parts and detecting how the parts relate to one another and to an overall structure or purpose.	4.1 Differentiating 4.2 Organizing 4.3 Attributing
5.	Evaluate	Making judgments based on criteria and standards.	5.1 Checking 5.2 Critiquing
6.	Create	Putting elements together to form a novel, coherent whole or make an original product.	6.1 Generating 6.2 Planning 6.3 Producing

From an Irish perspective, the *Irish Survey of Student Engagement* (ISSE) now provides insight into the experiences of over 40,000 students across 27 higher education institutions in Ireland (ISSE, 2019). Based on such data, lecturers in higher education institutions are strongly encouraged to consider the organisation of curriculum, learning and assessment to facilitate student participation in meaningful activities, aimed at promoting student engagement and learning (ISSE, 2019). In light of such data and based on a host of assessment-related literature, this paper seeks to report on the design, delivery and assessment of a first year undergraduate module in developmental psychology, involving students from a four year Bachelor of Education primary teaching programme at an Irish university. In reporting on this module, emphasis is placed on the range of formative assessment, summative assessment and self-assessment strategies employed across the module to promote broad learning for students across all levels of Bloom's revised taxonomy (Anderson & Krathwohl, 2001).

2. Description of Teaching/Learning Context

This module was designed and delivered by one lecturer to over 400 students in the first semester of their four year initial teacher education programme. The module aimed to develop preservice teachers' understanding of children and their development, with an emphasis on the child as learner. In particular, the module aimed to provide students with an understanding of children's development from birth to early adolescence across the domains of cognitive, social and emotional development, with focus on key theories of child development. Thereafter, the module aimed to bridge the gap between theory and practice by examining the link between theoretical principles and their practical application in the classroom. In this regard, the module sought to emphasise the role of the primary school teacher in supporting the child as learner through the provision of developmentally-

appropriate learning experiences. Finally, the module aimed to introduce student teachers to cutting edge research in developmental psychology, with particular emphasis on the Irish context.

This module formed a three European Credit Transfer and Accumulation System (ECTS) credit module, comprising 24 contact hours for students over a 12-week semester. This was delivered in the format of two individual 45 minute lectures to students in groups of 200, equating to a total of 48 lecture hours for one lecturer on this module. The 45 minute lecture duration was selected as per the College's policy for single lectures. Although the lectures could have been delivered collectively to the whole student cohort of over 400 students, it was anticipated that splitting the group into two groups of 200 students would allow for greater levels of lecturer-student interaction, as well as student-student interaction, during lectures. In addition to the contact hours, students were required to devote an additional three private study hours to the module weekly across the semester.

3. Assessment Strategies and Related Literature

In an effort to realise the module's learning objectives and promote student learning across all levels of Bloom's revised taxonomy (Anderson & Krathwohl, 2001), two forms of summative assessment were adopted for the module. Firstly, students were required to engage in an end of semester examination worth 40%, involving both multiple-choice questions (MCQ) and short answers. The aim of this exam was to assess students' *recall* and *understanding* of child development theory, with due regard for lower levels of Bloom's Revised Taxonomy of Educational Objectives (Anderson & Krathwohl, 2001). Thereafter, students were required to work collaboratively in groups of three to create a 'Supporting the Child as Learner' teacher booklet (worth 60% of the module). As students were new to the College, they were randomly assigned by the lecturer to these groups. The aim of this booklet was two-fold. Firstly, as students were newly enrolled in third level education, it was hoped that the collaborative nature of the project would support students' peer learning and enact one of the key learning theories in the Irish primary curriculum i.e. social constructivism (Vygotsky, 1978). Secondly, the aim of the booklet was to promote higher levels of student learning, with reference to Bloom's revised taxonomy (Anderson & Krathwohl, 2001). Based on a clear grading rubric (see Table 2), the booklet sought to encourage students to *apply* theories of child development to classroom practice, with reference to cutting-edge research and the Irish Primary School Curriculum (Government of Ireland, 1999). Students were also required to *analyse* and *critique* key learning related to child development, such as through comparing and contrasting theories with reference to their practical application in the classroom. Overall, it was hoped that by working collaboratively with peers and discussing the practical application of theories of child development to classroom practice, students' future applied practices in the classroom would be strengthened.

Table 2. Grading Rubric: Group Teacher Booklet

Grading Rubric: Group Teacher Booklet (60%)	Poor 0 - 3	Average 4 – 7	Excellent 8 – 10
Accuracy of information (10%) <i>Accurate, comprehensive understanding of psychological theories and stage of development</i>			
Depth of analysis/critique (10%) <i>Depth of analysis, with evidence of a critical viewpoint Compare/contrast of theories; evidence of conceptualizing, applying, analysing, synthesizing, and evaluating information</i>			
Application of theory to practice (10%) <i>Evidence-based application of theories to classroom practice</i>			
Linkage of psychological theories to Primary School Curriculum (10%)			
	0 -1	2-3	4-5
Use of up-to-date, supportive literature (5%) <i>Appropriate use of quality, up-to-date professional and/or academic literature to support analysis</i>			
Structure and organisation (5%) <i>Coherent structure and organisation; visually engaging</i>			
Adherence to academic conventions (5%) <i>Clarity & consistency of conventions for referencing</i>			
Appropriate inclusion of resources/supportive materials (5%) <i>Resources/appendices illustrate clear application of theories to practice; creative, additional research evident</i>			

Cognisant of the need to support students' learning and engagement across the module, a series of formative assessment and self-assessment methodologies were also incorporated into the module. Within the large lectures comprising 200 students, the lecturer employed a range of formative assessment strategies, with particular focus on Active Student Responding (ASR) techniques. Active Student Responding (ASR) encompasses a series of strategies that promote active participation of students in their own learning (Jerome & Barbetta, 2005). Griffin and Ryan (2016) argue that by using ASR at a whole-class or group level, students' opportunities to respond in class are maximised, thereby supporting student learning, engagement and assessment. Moreover, ASR can be used pre-instruction, mid-instruction and post-instruction to assess students' learning and provide immediate feedback to both the teacher and students (Maheady et al., 2006). Examples of ASR strategies employed during the large lectures included use of response boards, action responses, think-write-pair-share and concept maps. Specifically, the lecturer typically commenced each lecture with a pre-instruction ASR strategy, conducted either on an individual or paired basis. This encouraged

students to recall material from the previous lecture and make connections with ensuing learning across the lecture. Examples included posing a range of MCQ questions to students, or asking students to recall key vocabulary from previous module content, with students responding on responses boards. Thereafter, the 45 minute lecture was typically split into three to four main sections. Each section involved lecturer delivery of new material to students. This was generally supported by PowerPoint slides, with reference to applied cases from classroom or psychological practice, in addition to use of video materials. Both during and following each teaching period, students were encouraged to reflect on the new learning material, such as by creating concept maps, and/or, by engaging in think-write-pair-share activities. Students were also encouraged to relate learning to their prior experiences with children, with the aim of promoting higher-order learning and ensuring that all theoretical learning was mapped onto applied cases and practice. Finally, each lecture typically finished with use of an ASR strategy to support students to consolidate key learning. Again, this may have involved quick-fire question and answer sessions, students' documentation of five key points from the lecture, or the lecturer posing a case scenario that students had to reflect on prior to the next lecture, as informed by that week's lecture content. In addition to the in-class ASR strategies, the lecturer employed an online methodology to support student learning and assessment beyond the classroom. This involved the preparation of a range of MCQ quizzes which students accessed weekly through 'Moodle' - their online learning platform. Students were permitted to engage in the online quizzes as frequently as they wished, with instant online feedback provided to students on their performance.

4. Reflection on Findings and Implications for Practice

Following completion of the module, the lecturer reflected on student data to assess students' engagement in the module and levels of student learning. Firstly, attendance data from weekly lectures was extremely high, with an average of over 90% attendance across the module. Although students were not awarded marks for attending the module, there was potential for students to lose up to 10% of their overall marks for poor attendance. Accordingly, it was difficult to ascertain whether high module attendance was attributable to the teaching approaches and ASR strategies employed in the face-to-face lectures, or rather, a reflection of students' concerns of losing marks in light of lecture non-attendance. Nonetheless, informal feedback from students highlighted how the in-class ASR techniques were very helpful in supporting in-class engagement and learning. In particular, students noted how lecture attendance and in-class formative assessment techniques reduced the level of additional study required on lecture-based material. Data from the online Moodle quizzes was also very high, with 95% of all students engaging repeatedly in the six online Moodle quizzes. In particular, a surge in student engagement in online quizzes was observed nearing the end of semester, whereby students appeared to use the online quizzes as an effective self-

assessment strategy prior to the exam. Although exam questions were not directly copied from the online quizzes, the average student performance in the final exam was over 70%, highlighting the high level of student *recall* and *understanding* of pedagogical material across the module. In contrast, the teacher booklets demonstrated much deeper levels of student learning, whereby students demonstrated varying levels of ability to apply psychological theories to practice. In general, students' ability to critique theories and make direct links between the developmental theories and classroom practices was very strong. Group booklets also showed links made between the developmental psychology module, other pedagogical lectures and students' weekly experiences on School Placement. Notably, a number of lecturing colleagues commented on students' reference to developmental theories in other College assignments, highlighting the *application* of learning beyond the module itself.

Although the design, delivery and assessment of this module posed a range of positives, particularly for student learning, drawbacks of the module must be acknowledged. Firstly, the level of planning and background organization that was required for the module cannot be overlooked, which resulted in high lecturer workload. For example, very high levels of planning were required to ensure that weekly lecture material was accessible and engaging, with due regard for incorporating the breadth of module content, meaningful case studies, videos and ASR activities. This resulted in each lecture being very content-heavy and time-sensitive, whereby the lecturer often felt under pressure to cover all material in the short 45 minute period whilst keeping students active and engaged. In addition, high preparation was necessary on the part of the lecturer to create and upload the online MCQ questions for students to support their learning beyond lecture time. On reflection, it is questionable whether the use of more flipped classroom techniques could have been employed within the module, to increase student effort outside of class time and allow more space during lectures for reflection, discussion and higher-order learning. Previous studies have shown the benefits of this approach in teaching and learning, and the means by which it can support increased lecturer-student contact time for engagement in higher levels of Bloom's taxonomy (Gilboy, Heinerichs & Pazzaglia, 2014). Moving forward, the lecturer advocates for increased use of flipped classroom strategies in module design and subsequent delivery, to enable greater enactment of the principals of scaffolding theory; specifically, higher levels of fading of lecturer support and greater transference of responsibility to the learners (Van de Pol, Volman & Beishuizen, 2010).

Secondly, although the general standard of the 'Supporting the Child as Learner' teacher booklets was extremely high, the lack of individual student accountability within the booklet and grading rubric made it difficult for the lecturer to ascertain the division of labor across the groups. Feedback from some students noted this as an issue, whereby some group members were reported to have engaged in social loafing. This phenomenon can result in students expending less effort than their potential when working collectively than when

working individually (Chidambaram & Tung, 2005). Nonetheless, the level of peer learning and enactment of social constructivism that occurred during the creation of the booklets cannot be overlooked, whereby it appeared to outweigh such issues. In the future, the lecturer advocates for some element of individual student accountability within the formation and grading of the booklet, to ensure that students cannot 'free-ride' on other students' efforts and achievements.

On reflection, it is clear that a range of strengths and limitations have been identified with this large undergraduate module, with reference to its design, delivery and assessment. Moving forward, it is recommended that lecturers consider incorporating a range of formative assessment, summative assessment and self-assessment strategies across modules to support student engagement and broad levels of student learning in large lecture groups. Nonetheless, issues related to lecturer workload and student effort must also be considered, whereby employment of greater levels of flipped classroom activities may serve to fade lecturer support and transfer greater responsibility to students over the duration of the module (Van de Pol et al., 2010). By incorporating such strategies, assessment can serve to form a central component of the teaching and learning process, becoming a tool to support, facilitate and evaluate both surface and deep levels of learning for all (Holmes, 2018).

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