International Journal of Teaching and Learning in Higher Education 2020, Volume 32, Number 2, 251-267
http://www.isetl.org/ijtlhe/ ISSN 1812-9129

Great Expectations or Simply Realistic? An Exploration of Second Year Undergraduate Expectations of Science Programs of Study at an Australian University

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This study explored the lived expectations of second-year undergraduate science students at a large, government-funded university in Australia. The investigation made use of a mixed methods approach to inform the understanding of the second year of study expectations. Findings identified three key contributors to expected second-year experiences: (1) academic activities, (2) support provisions, and (3) the complexities of combining study, work, and life balance. Evaluation indicated that the majority of respondents articulated realistic expectations regarding academic difficulties and challenges associated with the second year. To successfully complete second-year courses respondents expected to engage primarily with activities and resources recognizably associated with assessment. The study provides evidence of misalignment between some student expectations of available learning support and preferred forms of support in contrast to those afforded them by the university. Furthermore, respondents expected that to keep up with course requirements they would need more time investment in academic activities, thus impacting their ability to maintain a balanced lifestyle that integrated study, work, and social endeavours. The study also identified a subset of students who did not have a developed awareness of their learning modalities, were socially isolated, and were undertaking long hours of paid employment. These findings call for continued improvement of students' expectations of second-year programs of study experiences to minimize poor student experiences through unmet need, including the development of sophomore slump.

Introduction

Student Expectations

A significant body of evidence indicates student expectations of tertiary education are important in enabling a successful assimilation, progression, and graduation. Internalized student perceptions of higher education are shaped by their previous cultural experiences and lead to the formation of specific expectations (Maunder, Cunliffe, Galvin, Mjali, & Rogers, 2013), and they have been classified into four distinct categories: optimistic, prepared, fearful, and complacent (Jackson, Pancer, Pratt, & Hunsberger, 2000). To date, there has been limited exploration of Australian experiences of progression beyond the first year of a program of study. Even so, there is a developing understanding that the experiences of second-year students are different from those of other academic year levels. Key influences on second-year student experiences are academic developmental factors and institutional contributors. The literature identifies specific key areas of undergraduate experience that are particularly challenging for second-year students and that are broader and more complex than the first-year experience (Jevons & Lindsay, 2018). Key developmental factors include the questioning of self-capacity, the search for purpose and direction, learning capabilities, and connection (Kennedy & Upcraft, 2010; Lemons & Richmond, 1987; Tetley, Tobolowsky & Chan, 2010). Additionally, there may be institutional confrontations for these students, particularly around program progression with selection of discipline major and support services that include financial, academic, and career advising (Gahagan, 2018; Nelson, 2018). These heavily influence the progression and experiences second-year students have.

Forming an understanding of student expectations allows for consequent analysis of their lived experiences during the progression through their programs of study (Appleton-Knapp & Krentler, 2006; Juillerat, 2000; Money et al., 2017; Nicholson, Putwain, Connors, & Hornby-Atkinson, 2013) and facilitates evidence-based effective enhancement of university experiences for second-year students through holistic program development. Few examples of this application support enriched student experience through undergraduate programs to address perceived issues of "sophomore slump" (Gahagan, 2018; Tetley et al., 2010; Wang & Kennedy-Phillips, 2013); more often, intervention programs are based on other institutional approaches. Recently recommendations have been to establish cohort and institutionally relevant data for the second-year student experience (Loughlin, Gregory, Harrison, & Lodge, 2013; Milsom, Stewart, Yorke, & Zaitseva, 2014; Schreiner, Schaller, & Young, 2018).

Many reports indicate the criticality of understanding students' expectations to increase learning and engagement with learning tools and strategies (Money et al., 2017; Schmitt et al., 2013), as well as satisfaction of students' experiences of higher education (Appleton-Knapp & Krentler, 2006). Expectations of both independent study requirements and academic behavioral confidence has been shown to

be positively predictive of end of semester results (Nicholson et al., 2013) and impacts student retention (Longden, 2007). However, it has also been noted that academic staff often have difficulty in identifying and subsequently addressing student expectations (Lopez & Lopez, 2014) likely due to changes in the function and purpose of higher education with the "students as clients" perception (Altbach, 2015; Pearson & Chatterjee, 2004; Tricker, 2005), compounded by increased student diversity created by the widening of participation (Bowman & Denson, 2014; Gale & Parker, 2013) and globalization of higher education (Altbach, 2015; International Strategy Office, 2017). Furthermore, these measures should not solely be the responsibility of academic staff but should rather be a collaborative effort between academics and student service providers to facilitate all progression experiences (Ayres & Guilfoyle, 2008).

There is a paucity of research that explores second-year student expectations, and while some have included science discipline students in a wider cohort, there exists only one study specifically identifying characteristics pertaining to this discipline's expectations (Money et al., 2017). There is some generalized understanding of second-year student expectations, primarily from the USA. These include negative expectations of academic self-efficacy in second year that can lead to attrition (Hill & Tinker, 2018) and those with high expectations of excellent academic outcomes derived from first-year performance where grades drop in second year have been identified to be at risk of developing sophomore slump (Pattengale & Schreiner, 2000).

A misalignment of second-year student expectations has been an area of concern raised as contributing to poor student experiences such as the 'sophomore slump.' (Heier, 2012; Willcoxson, Cotter, & Joy, 2011). The mismatch between expectations and realities are said to be multifaceted (Nelson, Kift, & Clarke, 2008) and provide framing to the overall student experience. Studies have shown that a student's perception of independent study and academic behavioral confidence can be used as a predictor of end of semester results in undergraduate programs (Nicholson et al., 2013). Additionally, if students entertain realistic expectations and accept responsibility for their own learning progression in combination with academic confidence and attending class, these will have positive student learning outcomes (Nicholson et al., 2013). It is also reasonable to entertain the notion that if students demonstrate unrealistic expectations, this will have a negative impact on the progression (Lopez & Lopez, 2014). Longden (2007) identified that changing student expectations of the university with regards to the nature of skills and knowledge associated with academic programs of study can have a positive impact on student non-completion rates. They found disconnections between student and program expectations as outlined in the Higher Education Standards Framework (Birmingham, 2015). Along with Pearson and Chatterjee (2004), the Longden (2007) report identifies a widening gap between lecturer and student expectations, thus leading to conflict between the delivered curriculum as opposed to what is expected and valued. This is particularly crucial when it comes to support systems. Second-year students anticipate that the support systems provided in their first year will remain, and when this is not the case, students indicate they feel surprised and abandoned by their university (Schreiner, 2018).

To enhance student learning there needs to be clear articulation of expected learning outcomes (Evenbeck & Hamilton, 2010). To achieve this there must be an understanding of the different elements of second-year expectations of the undergraduate experience. Subsequently, this can contribute to preventing contradictory behavior and encourage the development of realistic student expectations through provision of additional guidance or support where appropriate to enable student success (Stewart, Milsom, & Zaitseva, 2014; Thompson, Darwent, & Zaitseva, 2014). Faculty have a critical role in supporting realistic expectations, and they contribute holistically by connecting interests and strengths to possible career opportunities thus providing direction and purpose, key elements of challenge for second-year students. So too can be the positive influences of peers in levelling to establishing appropriate expectations (Yorke, Milsom, Stewart, & Zaitseva, 2014). Fostering realistic expectations can also abate potential student attrition due to unrealistically high expectations of service excellence and policy (Schreiner, 2010).

Given the grave impact student expectations can have on academic outcomes, there is a need to inaugurate an evidence-based understanding of how student expectations impact their higher education experience. Thus, processes that facilitate the development of appropriate expectations of second year are both anticipated and necessary for this cohort (Schreiner & Tobolowsky, 2018). Where provision is not met, evidence suggests it can contribute to the mediocre satisfaction reported by 50% of USA cohorts due to unmet expectations (Ruffalo Noel-Levitz, 2017) and risks the development of sophomore slump.

Similarly, it is important to provide opportunities for students to articulate their expectations through the development, refinement, and implementation of tools that can identify and index student expectations to further facilitate constructive dialogue towards a more positive alignment of student satisfaction with the educational experience (Appleton-Knapp & Krentler, 2006; Crisp et al., 2009; Juillerat, 2000; Schmitt et al., 2013).

The Purpose of the Study

This study explored the lived expectations of second-year undergraduate science students at a large government-funded university in Australia and forms part of a broader appraisal study of second-year experiences. For terms of reference in this paper, a second-year student was defined as the following: a tertiary student currently enrolled in their first bachelor's program of study who has progressed into their second year of academic work regardless of where their first year of academic program work was completed. Each student must have successfully completed a minimum of 75% of first year program-related coursework requirements.

Methodology

The study made use of a mixed methods approach to deepen the understanding of the second year of study. Application of a mixed-method research is regarded as highly effective in gathering rich, thick data that when analyzed reveals a detailed exploration of the study participants (Cresswell, 2007). The participant group was comprised of second-year science students enrolled in one of four different bachelor's degree programs: Bachelor of Biomedical Science, Bachelor of Science, Bachelor of Forensic Science, and Bachelor of Medical Science. Students were enrolled at one of two different campuses at a large government-funded university in Australia during 2015-2017. The participants were selected to represent key science discipline areas and create a student sample representative of the second-year science student cohort at this university. Students who were invited to participate met two specific criteria: (1) they subscribed to the proffered definition of second-year science students, and (2) they had engaged in studying core science subjects such as biology, chemistry, mathematics, and physics in the programs defined in this investigation.

Four data collection points occurred during the 2015-2017 academic years via online and in-person administration of a unique survey tool. An anonymous codification system was employed for each individual respondent. In addition, cross-checking for all data collection periods in 2015-2017 was implemented to insuring individual data was not captured twice for the same collection time point.

The expectations survey was designed to develop an understanding of student expectations of their second academic year of study in a science degree program contextualized by their experiences in the first year. It utilized an embedded mixed methods design (Fowler, 2009; Given, 2008; Schmitt et al., 2013) and included a combination of quantitative Likert and qualitative open response questions. Questions were developed initially based on relevant question selection from an assortment of survey tools used with similar cohorts, trialed during the 2015 pilot study (collection point 1) and slightly refined for the 2016 and 2017 collection points (2-4) to include more open response type questions. In 2017 an abridged hard copy of the survey tool was also distributed. Questions collected information on student expectations of both academic and non-academic influences of student experience in addition to pertinent general information. The survey was implemented at the beginning of each academic year during Teaching Period (TP) 1 in accordance with the university policy related to data collection associated with teaching and learning using the Lime Survey tool.

While response rates were low for any given online collection point (12.9%) and high for in-person respondents (100%), this was not atypical of the collection methodology and all recommended participation encouragement methods (Fowler, 2009; Garner, 2018; Nulty, 2008) were employed, except incentivization. The samples were analyzed and considered to be representative of the cohorts with regards to program of enrollment and campus of attendance. Given the nature of the sample, both in size and draw, the findings of this study are exploratory and cannot not be generalized. However, they form a foundational understanding of where further research is required to extend understanding of the second-year student experience phenomenon and of science undergraduate experiences.

In keeping with the mixed methodological approach, data evaluation was conducted using several analytical approaches. Quantitative summation of Likert data across the three years was completed. The sample size of individual data collection points was not sufficient to make inferential analysis or apply statistical validity tests. Initial quantitative data analysis indicated observed trends within the data that was consistent across multiple year levels. Therefore, data from each of the four collection points (119 respondents in total) was reported in collated form. The qualitative analysis used the latent analysis methodology of interpretative phenomenological analysis (Smith, Flowers, & Larkin, 2009). While this approach is traditionally used for small study in-depth interviews, here it was applied to the open-ended survey data. Initially, all survey responses were downloaded from the LimeSurvey and processed in an Excel spreadsheet. The open responses provided by 47 individual students were then extracted, collated, and saved into the NVivo software Version 11.0. Familiarization through "pawing", or multiple read-throughs, (Ryan & Bernard, 2003) was conducted in four sequential stages: initially in the LimeSurvey HTML data file, then in the extracted Excel spreadsheet, both in a digital and a hard

copy, and finally in multiple passes in the NVivo file. Responses were then codified using language analytics software NVivo software Version 11.0. Thematic analysis using a combination of deductive literature derived *a priori* codes, and inductive reasoning methodology insured that identified themes were emergent and thus grounded in the data (Ryan & Bernard, 2003; Stuckey, 2015). A code book including both *a priori* and emergent codes was implemented for each recursive data set to insure consistent comparison and evaluation. The implementation of these combination data analysis processes and measures provide validity and reliability as recommended (Cresswell, 2007; Leung, 2015).

Key Findings and Discussion

Demographically, respondents in this study (98%) were primarily enrolled as full-time students undertaking between 30-60 credit points (CP) of study in the semester the survey was conducted. Most respondents (87%) expected their living arrangements to remain the same as in first year being off campus (89%) and primarily (81%) with family. The majority can also be classified as meeting the commuter student profile (Stewart & Rue, 1983) where they spent either up to 10 hours per week (74%) or more than 10 hours per week (14%) travelling between their accommodations and university.

In general, respondents expected that there would be an increase in all university academic requirements compared with their first year, and consequently the year would be more difficult and challenging. They expected potential challenges arising from three core aspects associated with undertaking the second year of academic programs of study. These expectations focused around the following: (1) degree of difficulty, (2) support for, and (3) utility of time. The following discussion will explore regarding impact and potential associated risks. Second year is "…the crucible year. If you do will… then you're in a good place mentally and physically" (Student 1).

Major Theme 1: Anticipated Level of Difficulty of Curriculum

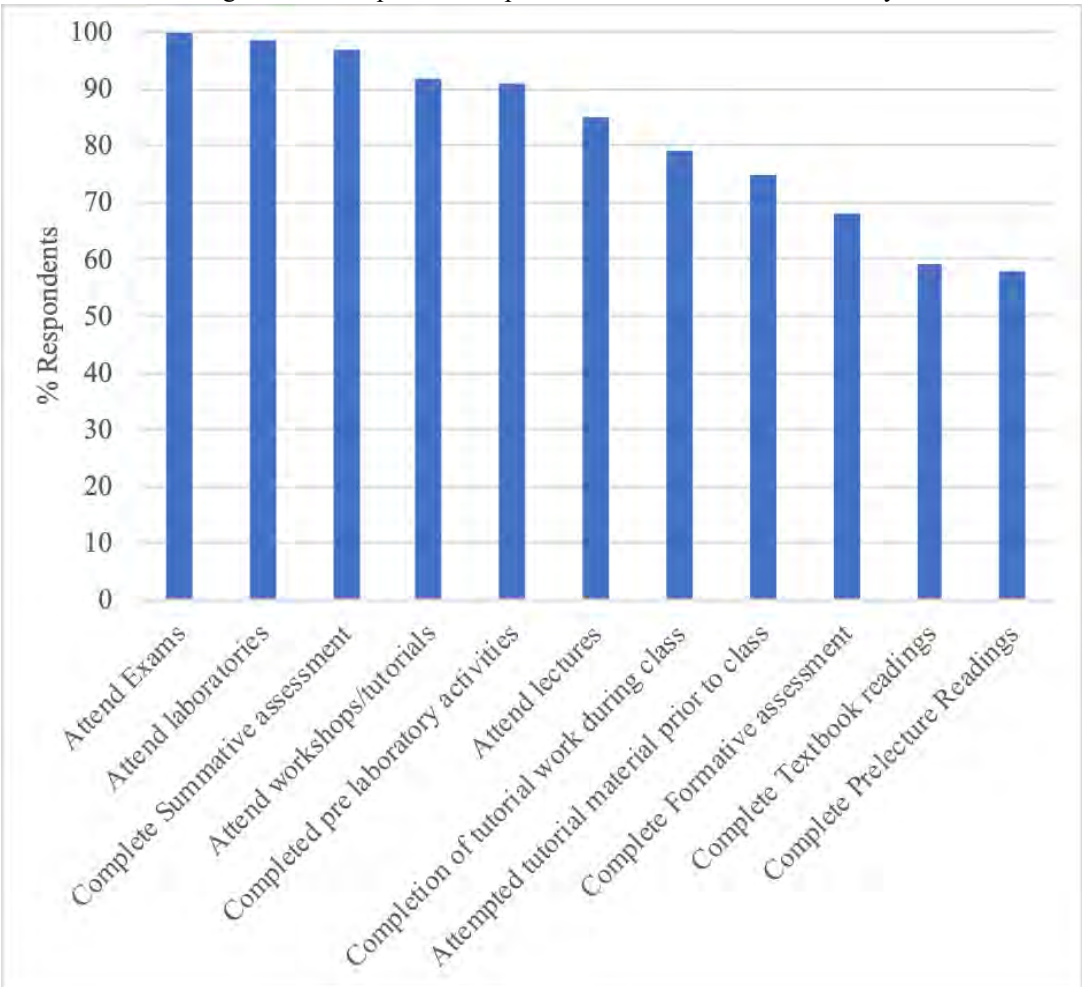
Greater than 90% of respondents in the study indicated that they expected their second academic year would be more challenging than the first year. This was independent of the amount of time respondents expected to engage with various activities both academic and non-academic in nature. There were specific aspects of undertaking second-year courses that students identified as presenting challenges. These included four sub-themes: (1) the difficulty of course content and associated assessment, (2) learning activities, (3) resources provided to facilitate demonstrated successful mastery of curriculum, and (4) the way these impacted on expected workloads. Many respondents echoed the sentiments of the students who shared the following: "I've heard that for my degree the course content and assessment will be more challenging then [sic] first year..." (Student 41). Frequently, these expectations were referred to in a negative vein with how they expected the second year to be "harder, more stressful, more depressing, more challenging" (Student 15), that "you have to suck it up" (Student 18), and that they anticipate that it would be "…very difficult" (Student 14), as well as "very stressful and hard to keep up with" (Student 44). Some students valued these challenges, recognizing that there is "…no point in doing a degree which is easy" (Student 2).

Sub Theme 1: Content and Assessment

Respondent expectations regarding the nature and undertaking of assessment in second year seemed realistic. The participants expected that assessment would be different from first year with regards to increases in both quantity and difficulty of course content. Many respondents articulated their realistic expectations regarding prior knowledge that they should "…have a high degree of understanding of the first year [sic] content" (Student 23) and that this knowledge formed the prerequisite knowledge for second year. Respondents also indicated they expected content to be "more discipline focused and [with] increased difficulty" (Student 26), that there would be "more things to cover and much deeper" (Student 33) with "not as much revision" (Student 29). There is limited information regarding second-year student expectations of curriculum. However, in a number of countries, including Australia, New Zealand (NZ), and the United Kingdom (UK), university degree programs are certified based on an academic quality framework. Studies in NZ with Information and Computing Technologies students found that there were significant differences between student and NZ Quality Framework expectations of curriculum components with students clearly lower than the framework (Lopez & Lopez, 2014). This misalignment poses a challenge for all stakeholders but is perhaps less of a concern with the cohort in this study.

The students involved in this study expected that assessment would focus more on evaluating greater depth of understanding. Respondents expected "more long/written response assessment; more frequent and more prep required" (Student 29), that there would be "more complex questions" (Student 23) of the "…short answer and essays…" (Student 24) variety, "…that require writing and critical analysis" (Student 30). These types of assessments require demonstration of

Figure 1
Learning activities respondents expected to undertake in their second year.



higher order revised Bloom's taxonomy levels (Krathwohl, 2002) in alignment with analysis and evaluation instead of the perceived to be simplistic multiple-choice questions favored in the first year. Respondents also expected there would be "a lot of assessment" (Student 33) that would "…be more difficult…" (Student 25) than first year with 80% of respondents across 2015-2017 anticipating experience assessment fatigue during their second academic year due to this combination.

There was a small sub-set of participants, primarily drawn from students enrolled in the Bachelor of Medical Science program, who clearly anticipated that their second year should be more difficult than the first and that this was valued as it enabled their development because attainment was not worth having unless this kind of adversity was embraced and overcome to further academic and personal growth:

> My degree program is designed to be intensive, so I can understand certain aspects of my life will become more strenuous. With the University's support mechanisms, I am sure that I can continue to achieve the marks that I need to attain my career goals. (Student 6)

Science students in this study appear to demonstrate more realistic expectations regarding the nature of content and assessment associated with their second-year level curriculum. They cannot be directly compared with combined discipline, international cohorts where reported unrealistic expectations were mismatched to institutional standards and requirements (Pattengale & Schreiner, 2000b). However, this does not dispel concerns they may have regarding their ability to demonstrate successful mastery of the materials, a previously identified concern of similar cohorts (Loughlin et al., 2013; Shastri, 1993).

Sub Theme 2: Learning Activities

From the outset of the second year, students identified that there were a number of academic learning activities that they expected to undertake to successfully master course requirements. These activities can be aligned to summative and formative assessment requirements. The majority of respondents indicated that the tasks they expected to complete most of the time (Fig 1) were those either involving summative assessment tasks such as laboratories, exams, and workshops or tutorials containing quizzes. Respondents also expected to complete academic learning tasks associated with a hurdle requirement (workshops) or as a gatekeeper for access to an assessment item (pre-laboratory activities).

For each cohort, the more the learning activity was associated with autonomous learning actions (such as pre-readings for lecture classes, textbook readings, and formative assessment) the lower the proportion of students who identified as expecting to undertake such tasks in their second year. Thus, it would appear that the more removed from direct assessment a task was, the less likely students were to complete it. Despite the benefits of these activities, this was neither a surprising nor unexpected outcome. Voluntarily undertaking non-assessable items requires intrinsic motivation from students for self-starter exploratory actions and curiosity (Bye, Pushkar, & Conway, 2007). In addition, students may not understand the benefits of various learning approaches that support knowledge schema construction for deep learning (Entwistle & Ramsden, 1983). However, it could also be that these may be students with lower academic outcome aspirations or high achieving students who did not require additional learning approaches to master content to their level of satisfaction. Equally, the lack of engagement with less assessment aligned activities could also be due to students focusing primarily on memorization or other surface-level learning strategies that require less academic engagement as a way to cope with the increased quantity of work required (Gardner, 2000), a characteristic previously identified in second-year students.

Of note, for those students who spent long hours in employment were more likely to engage with less learning activities, but these did include preparatory work for labs and tutorials. For students who had expected to spend less than 25 hours per week on university associated work in second year, their anticipated use of this resource set was not statistically different from the whole of cohorts. However, more of these students expected not to undertake learning activities requiring more autonomy and aligned with formative requirements. This could potentially be due either to push-back with students thinking, "[I]t's much more self-directed than first year even though first year was already self-directed enough" (Student 4) or the reasons listed previously which demonstrate unrealistic expectations of what it means to be an independent learner.

Laboratory experiences feature heavily in the second year of science programs in this study. As an authentic experiential learning opportunity, they are a key component of a science degree (Laws, 1996). Respondents indicated realistic expectations associated with laboratory experiences. These included a "more individual approach" (Student 33) "requiring finer skills" (Student 30) with "more independence" (Student 27) and greater complexity (Student 34) that "involves more than just mix A and B" (Student 23).

> I expect a lot more autonomy in the labs this year… which can be daunting, kind of like an apprentice chippy being given a nail gun for the first time…it looks cool, and it make a loud noise, but it's got a kickback to it. (Student 10)

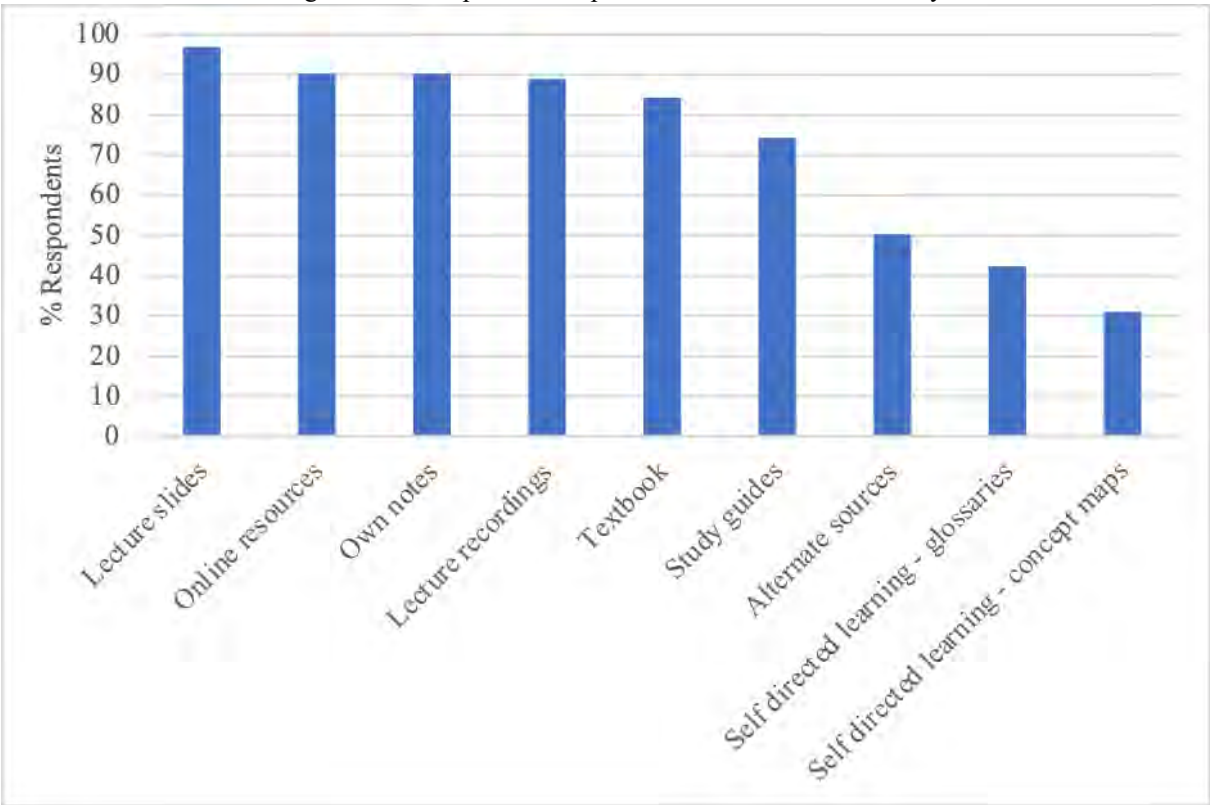
This shift to anticipated higher levels of independent learning is appropriate for second year. However, it has potential academic consequences if students do not have the academic capabilities or self-efficacy to make this transition. Students who are yet to completely separate from parental support and to make this autonomous shift are at risk of experiencing aspects of "sophomore slump" (Maggitti, 2008). This observation is likely partially a consequence of the widening participation enterprise (Australian Department of Education & Workplace Relations, 2009), whereby students with potentially lower levels of academic capital and self-efficacy are accepted into university programs, well supported in their transition-in phase, but are still in need of support in subsequent years when comparatively little is available (Money et al., 2017). This also concurs with findings in the UK where 45% of students indicated that in their second academic year, they found the need for so much independent learning difficult to acclimatize to (Webb & Cotton, 2018).

Sub Theme 3: Learning Resources

The students enrolled in the science programs specific to this study had a wide variety of resources available to support their learning (Figure 2). Respondents indicated that they were expecting to utilize a combination of resources with a high preference for commonly provided higher education resources including lecture slide materials, lecture recordings, online materials, and textbooks, all of which are readily available to students. Most students also expected to create their own notes from learning materials, but the nature of these notes was likely variable.

Here it should be noted that the prevalence of study guides at the second-year level is minimal, and while two-thirds of students expected study guides to be

Figure 2
Learning resources respondents expected to utilise in their second year.



available, disappointment likely ensued with their absence. The proportion of students undertaking autonomous deeper learning strategies such as concept maps and glossaries was consistently 25-40% of all cohorts. These activities involve knowledge association that develops connection and meaning, as opposed to surface learning including memorization, unreflectiveness, and unrelatedness (Entwistle & Ramsden, 1983, p. 137). This could be problematic for students given reports that student learning has a propensity towards visual/auditory learning styles and the loss of hands-on learning in second-year with a shift towards more theory meaning students may adopt less preferable learning strategies to survive (Gardner, 2000).

While access to a wide variety of resources and learning activities is helpful for meeting the diverse needs of a student cohort it can be better utilized if students also have an awareness of how best they learn. The data from survey respondents indicates that 78% of students reported a high level of awareness of how they best learned, which allowed them to be enhance their "capacity for meta-cognitive control of their learning process" (Kolb, 2014, p.39) thereby enabling them to minimize the amount of study time required to master concepts.

Respondents with limited awareness (22%) of their most suitable learning approaches had a number of similarities. They were more likely to be working 10 hours per week or more, were unlikely to participate in voluntary work, were identified as mostly spending large quantities of time on academic activities and had tendencies towards being more socially isolated. They were also more likely to have failed one or more first year courses.

Sub Theme 4: Workload

Students were asked to report their expectations regarding the amount of time they expected to spend weekly attending university classes and studying coursework. The university recommendation for the successful completion of course requirements for an average student is to spend 150 hours in a semester for a 10 CP course, which equates to 10-12 hours per week per course. However, this is with the assumption that students plan for sufficient provision of individual needs. This requires students to understand their own capabilities and best approaches for learning and to take responsibility to commit the appropriate time to achieve this outcome.

For 55% of respondents, their expectation was 30 hours or more per week in total on these activities. These students identified as being enrolled full-time, many of whom where undertaking an overload of courses. They were mostly enrolled in Bachelor of Medical Science (78%) or Bachelor of Forensic Science (73%) programs. Perhaps for the 78% of students who were aware of how they best learned, this allowed them to be more strategic about how to study and minimize the time required to complete activities successfully. For a small number of respondents (12%) they anticipated spending less than 16 hours per week in total on academic activities. These students were mostly enrolled in Bachelor of Science or Bachelor of Biomedical Science programs.

There is potential for a mismatch of expectations and requirements for individual students to complete activities to a personally satisfactory level that could subsequently lead to dissatisfaction. Evidence of this comes from students commenting, "[T]here is too much to do. Every week there is minimum [of] 2 assessments due plus all the prelab work" (Student 16). "You really cannot have rest, even in the holidays, there [sic] is stress about everything, exams, quizzes and everything" (Student 47). This concern resonates with previous bioscience student concerns regarding the expected workload (Gregory & McDonnell, 2012; Loughlin et al., 2013) but could also be affected by a mismatch between the time students require to complete task when compared with academic staff expectations during development (Stewart-lewis & Webb, 2009). For those students who were not self-aware of their learning capabilities and expected to spend shorter time periods on work this could lead to poor experiences and longer study time requirements due to lower self-efficacy or academic capital and unrealistic expectations.

Here students commented on their negative perception associated with the desire to achieve high grades, recognition of a high amount of work, and sacrifice of sleep and social life. "There is a large volume of work with 5 courses, and I attempt to complete these thoroughly to gain a deep understanding. It is not often possible to attain sufficient sleep without short-cutting on study" (Student 17). The challenge in this being that "the workload is heavy, and people strive for High Distinctions" (Student 7). The expected potential risk was academic burnout: "It's very difficult……I expect the entire Med Sci cohort will be burnt out and uninterested in their uni work…" (Student 14)

The expectation of excelling academically is not uncommon for students expecting to progress to medicine where the undergraduate exit Grade Point Average is a key determinant of the funding opportunities afforded to students' post-medicine. In addition, frequently perfectionism is a challenge for these students (Dickinson & Dickinson, 2015) and whilst they clearly anticipate the workload challenges associated with their program this doesn't necessarily support a positive student experience. It also supports previous reports that achieving academic success is the number one cause of stress for 90% of undergraduate students (Endsleigh Student Survey, 2014).

Overall students anticipated an elevation in the workload required to successfully complete second-year courses but that dependent on the students' self-efficacy, time management, and academic achievement goals, the amount of work expected could be variable.

Major Theme 2: Anticipated Support

The completion of an undergraduate degree program is not an easy endeavor and many students, particularly those from disadvantaged backgrounds, will find they require academic support for learning (Austrailian Department of Education & Workplace Relations, 2009). This provision is both needed and expected beyond first year enrollment (Schreiner & Tobolowsky, 2018) to support academic success and decision-making processes, including major selection, thus contributing to sense of direction, along with developing a sense of purpose (Bacio, 2017). Within the anticipated support there were two different aspects identified: (1) who respondents expected to provide them with support, and (2) the nature of the support provided.

Sub-Theme 1: Provision of Support

Juillerat (2000) indicated the need for evaluating second-year student expectations and determining whether high expectations were unreasonable as they have significant ramifications for student support and experience outcomes. In successfully navigating this increased degree of challenge a large proportion of students in this study anticipated that support would be provided to them from two main sources; their specific school/faculty and centralized university support centers. Consistently students across 3 years expected that the university would provide equivalent to first year (60%) or more (20%) support for academic learning in their second year. Students also reported that their expectations of support opportunities would be specifically of a just-in-time, just-for-me nature as regularly provided in first year transition experiences (Hamilton, 2018; Kift & Australian Learning and Teaching Council & Queensland Univeristy of Technology, 2009; Taylor & Harrison, 2016). Respondents indicated that they expected an increase in the level of support afforded them in accordance with the increased degree of difficulty of second year and that this support should be provided by both the faculty directly and the central university support center. These findings concur with previous reports from the Second-Year

Student Assessment™ (SYSA), which is part of the Retention Management System Plus™ from Noel-Levitz. "This motivational, early-alert assessment identifies self-reported attitudes, motivations, needs, and interests, as well as barriers to persistence and opportunities for supporting students as they transition to the second year of college" (Noel-Levitz, 2013). In evaluation, slightly more than 50% of respondents indicated they expected to seek institutional assistance in finding tutors to support their learning in second-year courses.

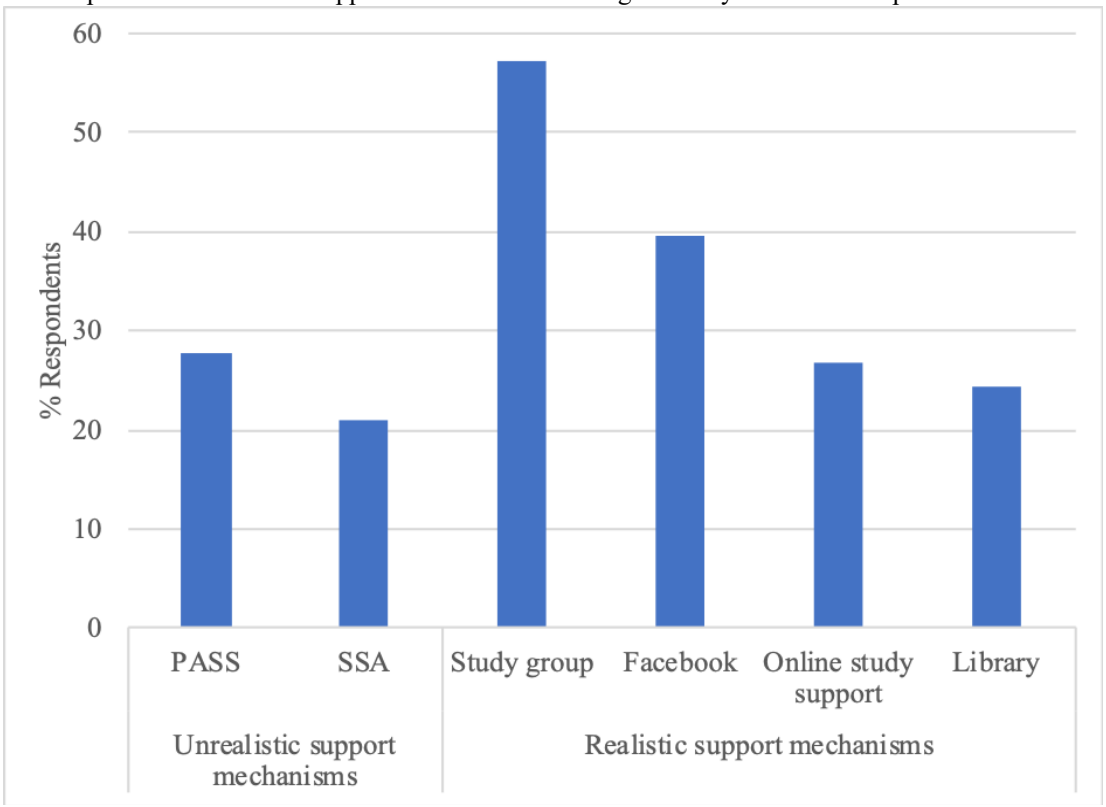
Sub-Theme 2: Support Modalities

Students were asked to indicate the type of learning support activities they anticipated using in their second year. Reported here are the six top activities identified by students that highlight two main modalities of support (1) online and (2) in person (Figure 3).

Four of these top six involve peer-assisted learning as the most common to be anticipated, through self-organized study groups, utilization of the social media platform Facebook, and formalized peer-assisted study support (PASS) sessions. Consistently the preferred support mechanism was self-established study groups with peers that were either in person or via online platforms such as Facebook. Respondents indicated that they expected to utilize their peers as resources to help "…understand concepts and subject matter (Student 12) or "…regarding what material in courses I am currently enrolled in are extremely relevant. Potentially regarding assessment items as well" (Student 6). This form of social learning not only benefits academic progression and supports the development of realistic expectations (Yorke et al., 2014), but also helps in building self-efficacy and a sense of belonging (Tower, Blacklock, Watson, Heffernan, & Tronoff, 2015) for second-year students. Peer learning has been noted by second-year students to be most beneficial when students had common purpose and common courses (Money et al., 2017).

Few second-year students expected to use the library learning support services in spite of a wide array of both in-person and online support services that would be considered appropriate for second-year use and complement peer learning on provision. These findings are similar to those of Webb and Cotton (2018) where the second-year students support moved from on-campus support, such as tutors, due to more professional support provision (such as academic skills developers) and online self-help. This shift was proposed to be affective for those with employment, commuting, and caring responsibilities.

Figure 3
Top six mechanisms of support for academic learning second-year students expect to utilise.



Two of the support mechanisms second-year students expected to utilize in this year were Peer Assisted Study Sessions (PASS) and Student Success Advisors (SSAs). Of the 60% of respondents who used PASS in their first year, 16% expected to have access in their second year. For SSA of the 31% of respondents who sought their assistance in first-year, 12% expected this to remain available. In addition, for both services there was a small proportion of respondents (8%) who had not utilized the resources previously but expected to draw on them to assist in their second year.

The funding support for both these services are limited to provisioning first year retention efforts and are not offered to subsequent years. The expectation be able to utilize them comes from the perceived value and benefit. Students commented, "[I] wish there were more PASS sessions for second year science courses" (Student 46), and "I would have greatly appreciated the Student Success advisor's help this year…(as they are) an essential tool to help navigate the way through courses and university" (Student 42). Having them "removed was a very big disadvantage in 2nd year." (Student 42) However, this is an unrealistic expectation of support options for second year.

These findings support previous discussion of how the loss of support mechanisms perceived to be beneficial and provided during the first-year of university can lead to students feeling abandoned by the university as they turn their attention back to incoming new first year students (Schreiner, 2018). Students who feel unsupported can also experience a decline in confidence and motivation, leading to negative academic behaviors that can impact progression (Bickerstaff, Barragan, & Rucks-Ahidiana, 2017). There is consequently some rationale for some universities to have implemented tailored personal tutoring support for second-year students, having found that the lack thereof contributes to the development of sophomore slump (Thompson et al., 2013).

From this study we can ascertain that the support modalities favored by students are those least likely to be provisioned by the university, and despite a high propensity to offer online support, the library student services offerings were not those utilized by students. Thus, students experience ensuing disappointment from the mismatch in expectation of continued offering of strategies students perceive to be beneficial in supporting academic success.

Major Theme 3: Competing Demands for Time

Maintaining a balance between study and life is a challenge for many students. Second-years students are no different in this regard. The findings of this study support a shifting imbalance with students experiencing a wide range of competing pressures. Student expectations indicate a variety of concurrent non-academic activities. These included two sub-theme areas: (1) working either to support themselves financially or developing experience in a work environment, and (2) social interactions, including recreation. Some respondents recognized the challenge of juggling different demands on their time and expected that they would "need to get better at time management because schedules will be much busier" (Student 28). Perhaps this shift was not unreasonable in the short term for long term benefit with some students acknowledging, "[I]t takes a toll on my social life to some extent but it isn't too bad. I don't mind it at all" (Student 38).

Sub Theme 1: Budgetary/Experience Employment Need

It is commonplace for students to undertake employment-related activities during their time as undergraduates. The majority of respondents (86%) indicated they were engaged in paid employment in some form with the majority of these students anticipating spending less than 20 hours per week. Students not employed (14%) were primarily from Bachelor of Science and Bachelor of Biomedical Science programs. This group of students were also unlikely to be engaged with volunteer activities.

This finding concurs with the only reported study specifically for second-year employment participation rates from the UK. This study identified 86-91% of second-year students usually worked up to 20 hours per week during the semester (Webb & Cotton, 2018). These rates seem at somewhat higher levels than those international statistical reports on undergraduate employment in general where 62.4% of Australian undergraduates (Australia Bureau of Statistics, 2013) and 43% of United States of America (USA) of full-time students (McFarland et al., 2017) work part-time during their studies. In the UK this proportion has been reported as high as 77% of undergraduates working part-time and 14% working full-time while studying (Endsleigh Student Survey, 2015).

There was a smaller group of students (17%) who reported working for greater than 20 hours per week. Many of these students also anticipated spending more than 20 hours per week engaging in social activities, and almost all expected academic activities would require more than 30 hours per week. Almost all students working long hours indicated higher awareness of their learning strengths, which would allow for more effective study time. They also indicated large periods of time spent weekly on social activities, primarily of a non-face-to-face nature. This combination suggests that

high-achieving students who expect to work long hours are likely to value balance and possess excellent time management skills to be able to fit work, study, and social activities into weekly time. They demonstrate optimal motivation, high self-efficacy, a productive mindset, good social skills and high degree of organization (Millward, Rubie-Davies, & Wardman, 2018). This data does not speak to the academic outcomes of these students. For students reporting long employment hours it was not uncommon that they accepted a lack of sufficient rest because they were endeavoring "…to complete all tasks along with making sufficient money at work" (Student 11). Students in this situation will potentially also apply coping options involving reduced academic achievement expectations, missed classes, and limited focus on some coursework (McInnis & Hartley, 2002). In addition, students working more than 30 hours per week were highly likely to possess unrealistic expectations about both the quantity and modalities of support afforded them by the university.

Australian students are recognized as some of the least financially stable in the world and need to work during their undergraduate studies far more than their international counterparts (McInnis & Hartley, 2002). The Australian Bureau of Statistics indicates that for 61% of these students, this was their main source of income (Australia Bureau of Statistics, 2013). The large proportion of students engaged in some form of paid employment are the result of Australian government economic policies affecting tertiary financial support (Pearson & Chatterjee, 2004) and employer expectations of demonstrated work experience (McInnis & Hartley, 2002), thereby creating a unique set of values and expectations. These circumstances are also not dissimilar to those reported from UK students enrolled in post 1992 institutions (Money et al., 2017). The lack of financial resources has also been cited as a contributing cause for the development of sophomore slump and second-year attrition in American cohorts (Noel-Levitz, 2013), thus the need for work during the second year may be necessary for continuation.

In this study, 45% of students also recognized the value of gaining experience and community integration through volunteering activities. Those volunteering were also mostly working less than 20 hours per week in paid employment. The proportion of respondents is lower when compared with the 63% uptake in the UK (Holdsworth & Brewis, 2014) but higher than in the US where recent declines show uptake is around 25% (Grimm & Dietz, 2018).

Sub Theme 2: Social Activities

Students reported participating in a variety of social activities whether in person or online. For the majority of students the amount of time spent per week on any individual activity was less than 14 hours per week. The main in-person activities were spending time with family and friends or at work. Non-face-to-face interactions were largely through the use of social media platforms, gaming, and watching televison.

Evaluation of expected social activity data indicated that the majority of students (71%) expected to engage in a combination of face-to-face and in-person social activities for less than 40 hours per week. Many of the students in this group demonstrated heightened awareness of their learning capabilities and expected to spend greater than 30 hours per week on academic activities (55%). Of those expecting to spend greater than 20 hours per week engaged in social activities, most were not anticipating needing to work at all or working relatively short hours (less than 10hours per week). They also expected few family responsibilities and shorter commuting times (less than 5 hours week). However, the majority of the group also indicated that they expected to use a variety of support resources, particularly from the top six categories indicating more realistic expectations of support.

Overall, 68% of respondents anticipated that the demands of the second year would impact their social life, e.g., "My social life will be compromised" (Student 31), with changes anticipated including "less free time" because "the workload of study leaves no time to socialize" (Student 13) primarily due to "…lots of assessment" (Student 19, 34, 37) and the "…need to study on weekends" (Student 29). In addition, an acknowledgement that some social activities in particular would be less possible:

> I will have to sacrifice many elements of my social life, such as going to parties and talking to other people due to the massive amount of study I have to do in order to complete assessment tasks successfully. (Student 4)

For those who didn't anticipate an impact on their social life (32%), it was because they acknowledged a lack of one, e.g., "[I] didn't have much of one [social life] to begin with (ha ha)" (Student 3), or they "…choose to keep a low level of social life, as university is more important to me" (Student 39). The value of social engagement was demonstrated by some students in that they expected to incorporate activities of this nature. "I will find balance, and still have a social life" (Student 8), and "I will plan around study to make sure the little socializing that I do still enables me to keep on track with my study" (Student 9).

For second-year students in the cohort of interest there appear to be many competing demands with students juggling work commitments, study commitments, and social activities. Students

demonstrated recognition that to be able to successfully complete academic activities, some compromises would likely be necessary. The most commonly reported compromise was rest, with just 33% of students expecting to gain sufficient rest in their second year and with lack thereof anticipated due to the anticipated elevation in the workload associated with second year and trying to maintain a work/study/life balance. Some students were expecting to find an alternative compromise by using peer group study as both a social and academic time with "…most time spent with friends at uni…studying" (Student 37) with "…most friends…in the same course" (Student 35), or by using "…time socializing [in the] network" (Student 27).

Conclusion

Expectations are formed from prior cultural experiences (Maunder et al., 2013), including those of first year (Pattengale & Schreiner, 2000a), coupled with clearly articulated requirements from faculty (Dunlap & Lowenthal, 2013) and the institution (Felten et al., 2016). A clear understanding of student expectations of their second year of undergraduate experiences enables the capacity to provide effective guidance to support student success through understanding driving factors for contradictory behavior (Stewart et al., 2014). Yet within the nascent understanding of second-year academic experiences, there is limited understanding of second-year science undergraduate expectations.

In this study, second-year Australian science undergraduates demonstrated appropriate expectations at the beginning of the year regarding many, but not all, dimensions of their second-year experience. The findings indicated that most respondents had appropriate expectations associated with the escalated nature of content and assessment, combined with learning activities that result in elevations in workload required in a second-year level academic program. Many respondents thought it would be difficult, and some welcomed this challenge with the recognition that more effort may be required to be academically successful in this year. Respondents also expected they would face challenges in endeavoring to balance the various aspects of their whole lifestyle, with attempts to meet their necessary, personal study workload requirements while working or having other commitments.

Areas where a mismatch between student's pre-conceived ideas of second year and the realities were also identified. These included the type of learning resources and support mechanisms available to them in their second year. Further disconnection between the modalities of academic support available and preferred support forms were identified. These factors were also impacted by a lack of awareness of suitable learning approaches. Inappropriate expectations potentially place students at risk. Areas of mismatch are concerning, given that previous reports from non-discipline-specified second-year cohorts indicate poor student experience due to unrealistic expectations leading to a decrease in academic performance and satisfaction (Ruffalo Noel-Levitz, 2017). The dissatisfaction of second-year experiences is a key contributor to intentions to withdraw (Gahagan & Hunter, 2006), particularly when coupled with the common second-year issue of poor self-efficacy (Thompson et al, 2014; Willcoxson, 2010). Further that these were common characteristics associated with the "sophomore slump" phenomenon (Juillerat, 2000) that may lead to attrition.

With the diversity of any given university undergraduate student cohort, those seeking to enhance the second-year student experience in any discipline would be advised to guide students to hold appropriate expectations around changes to curriculum, assessment standards, and academic support for learning. The paucity of understanding regarding second-year student expectations and experiences, particularly in the science disciplines, warrants continued study to deepen our understanding of their progression during and beyond the second-year level. Information pertaining to different discipline expectations and learning cultures of a country could provide further context in the future. This understanding will help to ensure effective setting of expectations and alignment with a university culture of learning to enhance the student experience and facilitate student progression and success.

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