

Article

Approaches to Learning: Does Medical School Attract Students with the Motivation to Go Deeper?

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Received: 7 September 2020; Accepted: 18 October 2020; Published: 27 October 2020



Abstract: Graduate-entry, following a science degree, is the preferred pathway into many medical schools, however little is known about how the learning approaches of medical students compare to those of science students. This study compared the learning approaches and achievement orientations of science students with those aiming to enter graduate-entry medicine programs. The two factor study process questionnaire and the achievement goal orientation survey were used to compare students in; stage one: third year science students ($n = 86$) to graduate-entry medicine students ($n = 158$); stage two: applicants to graduate medicine ($n = 84$); stage three: first year science students ($n = 363$) to first year pre-medicine students ($n = 68$). Medical students and applicants to medicine demonstrated a greater preference for deep learning than third year science students ($p < 0.0001$). Pre-medicine students were similar to medical students. Medical students, applicants to medicine and pre-medicine students also all had a greater preference for a learning goal orientation. The preference for a deeper approach to learning and stronger learning goal orientation in students enrolled in medicine or aiming to gain entry to graduate medicine indicates a motivation towards the acquisition of knowledge. Medical educators need to ensure that students continue to develop positive and beneficial styles of learning to assist them to develop into life-long learners.

Keywords: deep learning approach; achievement goal orientation; learning goal orientation; graduate-entry medicine; health science

1. Introduction

It is becoming increasingly common for medical schools to be transitioning to graduate entry medical degrees such as a Doctor of Medicine where students enter the program having completed another university degree. Graduate-entry programs are reported to increase medical student diversity, allowing more flexible and inclusive admissions policies aimed at mitigating the effect of socioeconomic disadvantage [1]. Students can enter into graduate-entry medical programs with a Bachelor degree in any discipline or from a prescribed degree often referred to as a premedical degree (Figure 1A). The majority of students entering graduate-entry medical programs are coming from undergraduate science and health science degrees [2–4] (Figure 1B). However, it remains to be determined if undergraduate science students approach their learning differently to those who go onto study graduate-entry medicine.

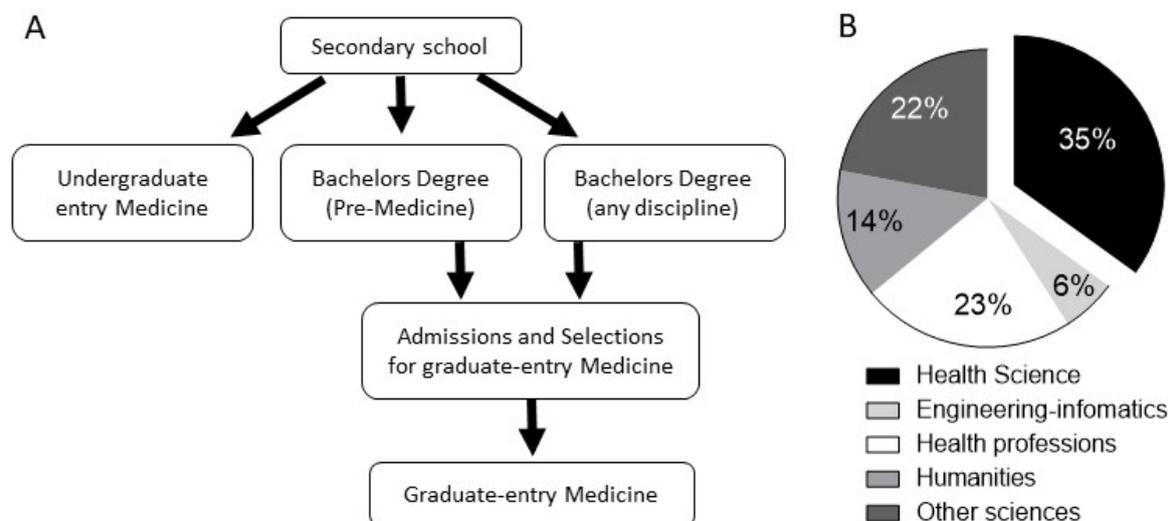


Figure 1. (A) Pathways into graduate-entry medicine and (B) Degree background for students entering our graduate-entry medical program. The majority of students have completed Bachelor degrees in science (22%) or health science (35%).

Undergraduate science degrees are usually structured in narrowly demarcated subjects, covering single disciplines, with little real overlap between different subjects or years. There has been criticism that this model discourages integration and encourages superficial learning, with emphasis on reproduction of facts rather than depth of understanding [5–8]. In contrast, the curriculum used by the majority of medical schools has been developed with a foundation of case-based learning [9] which is more likely to promote a deep approach to learning [5,10], assist in the acquisition of new knowledge and promote life-long learning [11–13]. Premedical degrees often try to emulate this educational approach by including case-based or problem-based learning.

There have been numerous different models developed to describe student approaches to learning but the majority of them characterize student learning approaches as either surface or deep [14,15]. A deep approach to learning occurs when students have an intrinsic motivation and interest in their learning. Students with a deep approach search for the meaning and application of what they are learning and critically evaluate and apply new information. A deep approach to learning has been associated with enhanced knowledge retention and greater understanding [16–18]. In comparison, students that use a surface approach to learning are motivated by a desire to simply complete the course. These students tend to learn by rote memorization and reproduction of specific isolated facts leading to a fragmented understanding. These students may be more motivated by a fear of failure than an intrinsic interest in the subject matter.

The approach that a student takes towards their learning, deep or surface, is influenced by a number of factors including the inherent nature of the student, the style of teaching and the methods of assessment used [14,19]. In many undergraduate courses, students display an increasingly surface, and decreasingly deep, orientation to their learning as they progress through the course [20–22]. Students in graduate-entry medical programs may differ in this regard [23,24].

One of the key distinctions between deep and surface learning approaches is the motivation which drives learning. These different motivations for learning have been examined in terms of the achievement orientation of the student. The two most basic achievement orientations described in the literature are learning goal orientation and performance goal orientation [25–27]. Learning goal orientation relates to a student's desire to acquire new knowledge, to increase competence and to understand new concepts. These students tend to be self-focused and think in terms of "have I learned?" or "have I improved?" [28]. In contrast, students with a performance goal orientation are focused on getting the right answer, they are aiming to demonstrate their ability and to win positive feedback.

These students are outward looking and evaluate in terms of “did I do better than other students in the class?” [29].

Dweck, one of the key proponents of achievement goal orientations, suggests that the traditional university education and assessment models, such as that used in many undergraduate science degrees, encourage a performance goal orientation at the expense of learning [30]. For example, the traditional academic assessment awards grades and the resultant academic ranking of students encourages students to look outward and rewards their performance relative to their peers rather than for their intrinsic desire to obtain mastery over the course content. In a study of first year science students, approximately 80% believed that lecture attendance should directly contribute to their grade, demonstrating the perceived value of performance over learning [31].

One of the other key differences in learning goal and performance goal oriented students is their response to challenging learning situations. Students with a learning goal orientation tend to have a strong self-efficacy and exhibit more adaptive responses to challenges [30]. These students are more likely to experiment, accept error, and self-motivate; demonstrating perseverance and a diversity of learning approaches [32]. This is a marked difference from students with a performance goal orientation, who tend to be more anxious about learning new skills [33], are more likely to give up in the face of challenges and feel overwhelmed by the inability to get the right answer [30]. Medical education differs from undergraduate science courses in its inherent complexity and uncertainty, leading to discussion about the importance of self-directed learning in this environment [34]. The inclusion of teaching methodologies aimed at building self-directed learning skills in students undertaking health professional courses (e.g., medicine and nursing) has been associated with improvement in knowledge acquisition compared to traditional teaching methods [35]. Students with a learning goal orientation are, therefore, better equipped with the strategies necessary to navigate through the challenges of ambiguity associated with practicing medicine [32].

Our hypothesis was that students enrolled in graduate-entry medical programs, those applying to medicine or those with a long-term aim to study medicine would be described as deeper learners with an enhanced learning goal orientation compared to cohorts of science students. To answer this question, we have analyzed and presented the data obtained using two survey tools, the study process questionnaire [14] and the achievement goal orientation survey [25]. These survey tools were chosen as they would allow us to investigate both the learning approach and achievement goal orientation of the individual student cohorts. This combination of survey tools has not previously been used in these student cohorts. The study was conducted in three stages. In stage one the learning approaches and achievement orientations of students enrolled in graduate-entry medicine was compared to those of students enrolled in the third year of a science degree. These groups were chosen as many students studying graduate-entry medicine have completed a science degree in preparation for their medical studies. In the second stage we examined the learning approaches and achievement orientations of applicants to medicine to determine if applicants to medicine were more similar to graduate-entry medical students or third year science students. The final stage of the study compared the learning approaches and achievement orientations of first year science students with those of first year students enrolled in a pre-medicine degree. These groups were compared to determine if the learning approaches and achievement orientations we demonstrated in graduate-entry medical students were already present in students demonstrating an early intention to study medicine.

2. Materials and Methods

2.1. Overview and Ethics

The study was conducted at an Australian university over a two-year period. The study was approved by the Human Research Ethics Committee. The questionnaires used were administered to each cohort either by face-to-face distribution of the surveys during scheduled class time or via an email invitation with a web link to an online survey. All the participants were provided with the same

background to the study and instructions for completing the questionnaire. All students, except the applicants to medicine, were enrolled in degrees at the same university.

2.2. Student Cohort

Stage one of the study included two cohorts of students. The first cohort were students enrolled in the final semester of the third year of a science degree ($n = 86$, response rate = 83%; gender = 36% female, 10% male, 55% unknown; age (median (IQR)) 21 ((20–22) years). The science degree included disciplines of medical health science, exercise science or nutrition science. Students enrolled in this degree studied a combination of core and elective subjects, individually delivered across the faculty, and included physiology, anatomy, biochemistry, biology, public health and nutrition. The second cohort of students for the first stage of the study were those enrolled in graduate-entry medicine ($n = 158$, response rate = 94%; gender = 55% female, 45% male; age (median (IQR)) 24 ((22–28) years). These students were invited to participate in the study during the first week of the medical program. As such, they had not directly experienced the medical curriculum at the time of completing the survey. The medical program is designed with an integrated case-based curriculum approach. Students were enrolled in a single pre-clinical subject that integrates all disciplines (anatomy, physiology, pathology, pharmacology etc.) delivered according to human body systems.

The second stage of this study invited applicants to this same graduate-entry medical program to participate in the study ($n = 84$, response rate = 24%; gender = 57% female, 43% male; age (median (IQR)) 24 ((23–30) years). Applications for graduate-entry medicine are received from both internal students of the university and external students completing their undergraduate degrees from other institutions. All the applicants to medicine had met the minimum academic criteria for entry into the graduate medical program, including a minimum grade point average (GPA) score ($>5/7$) and graduate medical school admission test (GAMSAT) score. These students had also submitted a personal portfolio that scored all-round achievement in areas such as community service, academic endeavor, and other significant and personal achievements. Students were at the interview stage of the admissions process when they completed the questionnaire. This interview process consisted of ten multiple mini interview (MMI) stations designed to assess qualities such as teamwork, problem solving and ethics. Approximately half of the applicants who participated in this study had science as their primary degree. This is representative of the overall population of students who apply for entry into medicine at our institution.

Stage three invited two first year student cohorts to participate in the study. These were students enrolled in the first year of a science degree ($n = 363$, response rate 91%; gender = 48% female, 35% male, 16% unknown; age (median (IQR)) 18 ((18–20) years) and students enrolled in the first year of a pre-medicine degree within the same faculty ($n = 68$, response rate = 56%; gender = 60% female, 29% male, 10% unknown; age (median (IQR)) 18 ((18–18) years). The science degree courses were as previously described above. In contrast, the pre-medical degree was specifically marketed to students that are focused on continue onto graduate-entry medical studies. The selection process of the pre-medical degree included a high achievement in their final year of high school study. The pre-medicine degree was very similar to the science degree in that students studied a combination of core and elective subjects, individually delivered across the faculty, and included physiology, anatomy, biochemistry, biology, public health and nutrition. The majority of subjects in the pre-medicine degree were the same as those in the science degree. The pre-medical degree also included a specific integrated capstone subject in the final year of the degree that was designed to be similar to the integrated case-based approach taken in the medical program at our university. Pre-med students included in this study were only in the first year of their degree and as such had not yet been exposed to this subject at this stage of their program.

2.3. Survey Instruments

The revised two factor study process questionnaire: R-SPQ-2F was used in this study [14]. This has previously been used to assess the learning approach of medical students at another university [36,37]. The R-SPQ-2F questionnaire required participants to respond to 20 items using a five-point Likert scale. This questionnaire has been validated into two main factors: deep approach and surface approach each derived from 10 items [14,38]. The maximum for each learning approach is 50. As these deep and surface approaches are calculated by aggregating Likert scores from individual questions, students can present with high scores for both factors. This study was interested in the preferred learning approach therefore the deep preference was determined by subtracting the score for surface approach from the score for deep approach.

An achievement goal orientation survey was also completed by the students. This survey was originally designed by Button et al. [25] and used by Tan [39] and Dawson et al. [32] to quantify student achievement orientations. The survey was administered as validated for medical students using a seven-point Likert scale [32]. The survey responses have been validated for two factors: learning goals orientation and performance goal orientation which are each calculated by the aggregating Likert scores for eight individual questions. The maximum for each goal orientation is 56. In order to identify an individual's preference for a learning goal orientation, the score for performance goal orientation was subtracted from the score for learning goal orientation (as described [32]).

The surveys were distributed either face to face in a large group teaching session or administered online via Survey Monkey™ (San Mateo, CA, USA). The greatest response rate was achieved when the surveys were distributed in scheduled class time (first and third year science, and medicine). When the surveys were distributed at information sessions (pre-medicine) the response rate was lower and when they were distributed online (applicants to medicine) the response rate was below 30%.

2.4. Data Analysis

Statistical analysis was undertaken using GraphPad Prism 6.07 (Graphpad Software, San Diego, CA, USA). Where appropriate either an unpaired *t*-test or a two-way analysis of variance was used to compare the learning approaches and achievement orientations of the student cohorts. In stage one of this study third year science students were divided into those with a GPA > 5 and those with a GPA < 5. In stage two a sub-analysis of medical students and applicants to medicine was completed comparing those with a previous degree in science or a health-related discipline against those with a previous degree in non-science disciplines. A prior science degree was considered if their degree was in areas such as medical or health science, physiotherapy, optometry or pharmacy. Students were considered to have a non-science prior degree if they had completed their degree in disciplines such as engineering, humanities or law. Applicants to medicine were also subdivided according to they were successful (or not) in gaining a position on the medical program. All data are expressed as mean (\pm SEM) and alpha was set as $p < 0.05$.

3. Results

3.1. Stage 1: Third Year Science Students Have a Lower Preference for a Deep Learning Approach than Medical Students

Students enrolled in medicine displayed a significantly greater preference for deep learning than those enrolled in the third year of a science degree (Figure 2A). Students enrolled in medicine also had significantly higher scores for deep approaches to learning ($p < 0.0001$ *t*-test) and lower scores for surface approaches to learning ($p < 0.0001$, *t*-test) than those enrolled in third year science (Table 1).

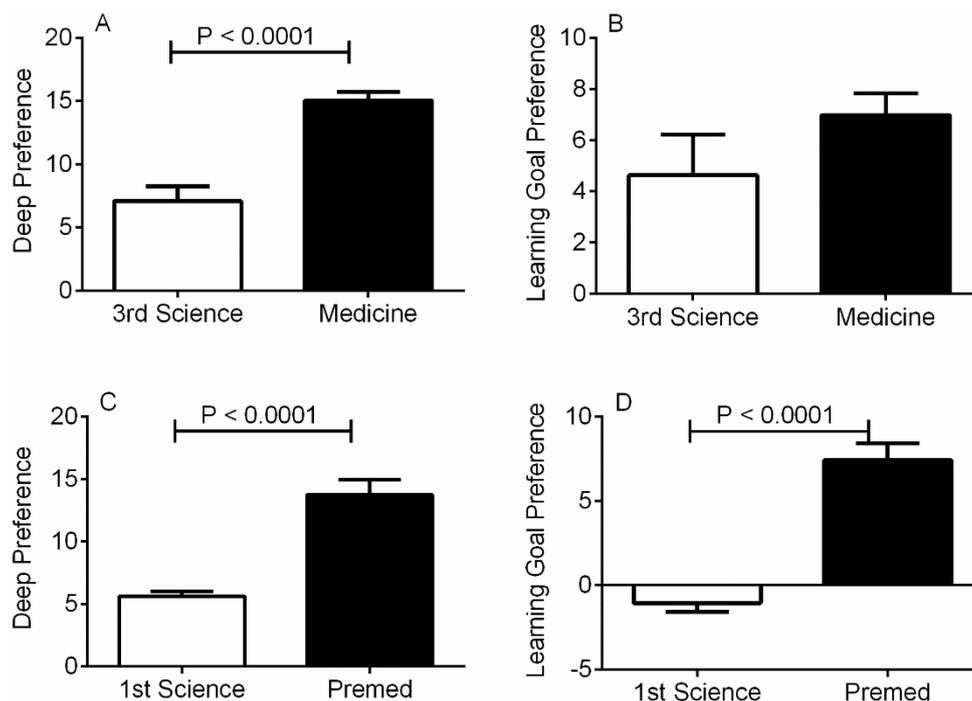


Figure 2. (A) Third year science students demonstrated a significantly lower preference for deep learning than those in graduate-entry medicine ($p < 0.0001$, t -test). (B) there were no significant differences in the learning goal preference in third year science students compared to graduate-entry medical students (C) First year science students demonstrated a significantly lower preference for deep learning than students enrolled in pre-medicine ($p < 0.0001$, t -test). (D) First year science students also demonstrated a significantly lower preference for a learning goal orientation than students enrolled in pre-medicine ($p < 0.0001$, t -test).

To be eligible for a place in graduate-entry medicine, students must attain a weighted GPA > 5.0 . The GPA for the third-year science students ranged from 4.2 to 6.9. There was no difference in the scores for deep or surface approach of science students with a GPA > 5.0 ($n = 67$) compared to those with a GPA < 5.0 ($n = 19$, Table 1). There was also no difference in medical students with and without a prior science degree in any of the scores that related to deep or surface approaches to learning (Table 1).

Although the learning goal preference of graduate-entry medical students was higher than that of third year science students, it was not significantly different (Figure 2B, $p 0.17$, t -test). There was also no difference in either the learning goal orientation ($p 0.41$ t -test) or performance goal orientation ($p 0.30$, t -test) of graduate-entry medical students compared to third year science students (Table 1). There was no difference in the scores for learning goal orientation or performance goal orientation for science students with a GPA > 5.0 ($n = 36$) compared to those with a GPA < 5.0 ($n = 3$, Table 1). The reliability of this finding is however, compromised by the small number of third year science students with a GPA < 5 ($n = 3$) who completed the learning dispositions survey. Similarly, there was no difference in either the learning or performance goal orientation (Table 1) of medical students who had completed a prior science degree compared to those who had completed their degree in another discipline (Table 1).

Table 1. Comparison of learning approach and achievement goal orientation in the student cohorts.

	Learning Approach			Achievement Goal Orientation *		
	<i>n</i>	Deep	Surface	<i>n</i>	LGO	PGO
Stage 1						
• Third year Science	86	30.8 ± 0.8 ^{a,c}	23.6 ± 0.7 ^{a,c}	39	46.7 ± 1.3 ^b	42.2 ± 1.2
o GPA > 5	67	31.3 ± 0.8	22.8 ± 0.8	36	46.8 ± 1.4	42.1 ± 1.3
o GPA < 5	19	29.2 ± 1.7	26.7 ± 1.2	3	46.0 ± 1.0	43.7 ± 1.8
• Graduate-entry Medicine	158	34.4 ± 0.4 ^{a,b}	19.3 ± 0.4 ^{a,b}	118	47.6 ± 0.5 ^a	40.8 ± 0.7 ^a
o prior science degree	83	33.7 ± 0.6	19.2 ± 0.5	60	47.8 ± 0.6	40.1 ± 1.0
o prior non-science degree	29	36.1 ± 0.9	18.1 ± 0.7	19	48.6 ± 1.1	41.1 ± 1.6
Stage 2						
• Applicants to Medicine	84	36.2 ± 0.7 ^{b,c}	17.2 ± 0.6 ^{b,c}	82	48.8 ± 0.5 ^{a,b}	38.9 ± 0.7 ^a
o prior science degree	54	36.6 ± 0.8	17.1 ± 0.7	54	48.9 ± 0.7	39.3 ± 0.9
o prior non-science degree	30	35.4 ± 1.2	17.7 ± 1.0	28	48.5 ± 0.7	38.5 ± 1.2
o with offer for medicine	40	35.9 ± 1.0	17.5 ± 0.9	38	47.9 ± 0.8	39.5 ± 1.1
o no offer for medicine	44	36.4 ± 0.9	16.8 ± 0.8	44	49.6 ± 0.8	38.6 ± 0.9
Stage 3						
• First year Science	453	29.4 ± 0.3 ^d	23.8 ± 0.3 ^d	363	43.5 ± 0.4 ^c	44.3 ± 0.4 ^b
• Pre-medicine	68	34.4 ± 0.8 ^d	20.0 ± 0.4 ^d	63	47.9 ± 0.7 ^c	40.4 ± 0.9 ^b

* Achievement goal orientation classified as either learning goal orientation (LGO) or performance goal orientation (PGO). Values are mean ± SEM, values in the same column with the same superscript are significantly different from each other, $p < 0.05$. GPA: grade point average.

3.2. Stage 2: Applicants to Medicine Are More Similar to Medical Students than Third Year Science Students

The learning approaches of applicants to medicine were compared to those of third year science students and graduate-entry medical students (ANOVA). The applicants to medicine were not significantly different to medical students in terms of their deep approach to learning and had significantly lower scores for surface approaches to learning than the graduate-entry medical student cohort (Table 1). Applicants to medicine were significantly different to third year science students in terms of both deep and surface approaches to learning (Table 1). Similarly, the applicants to medicine showed a significantly greater learning goal orientation than either graduate-entry medical students or third year science students and a significantly lower performance goal orientation than graduate-entry medical students (Table 1).

In the applicants to medicine, there was no difference in the deep or surface learning approaches (Table 1) of those who had completed a prior science degree compared to those who had completed their prior degree in another discipline (Table 1). Likewise, there was no difference in the learning approaches of applicants who were successful in being offered a place on the medical program compared to those who were not offered a place on the program (Table 1). There was also no difference in the learning

or performance goal orientation of applicants to medicine based on prior degree or success in being offered a place on the medical program or not (Table 1).

3.3. Stage 3: Students Enrolled in Pre-Medicine Had a Greater Preference for Deep Learning than First Year Science Students

The students enrolled in a pre-medicine degree demonstrated a higher preference for deep approaches to learning than those enrolled in the first year of a science degree (Figure 2C, $p < 0.0001$). The students enrolled in the first year of a science degree reported higher scores for a surface approach than students enrolled in first year of a pre-medicine degree (Table 1, $p < 0.0001$, t -test). Students enrolled in first year pre-medicine also had a significantly higher learning goal preference than first year science students (Figure 2D). These same differences were also seen in the scores for both learning goal orientation and performance goal orientation (Table 1, $p < 0.0001$, t -test). This section may be divided by subheadings. It should provide a concise and precise description of the experimental results, their interpretation as well as the experimental conclusions that can be drawn.

4. Discussion

In support of our hypothesis, the first major finding from stage one of this study was that students enrolled in medicine had a significantly higher preference for deep learning than the students enrolled in the third year of a science degree. In stages two and three we determined that this enhanced preference for deep learning was also demonstrated in applicants to medicine and in students enrolled in pre-medicine suggesting that medicine attracts students with a preference for deep learning. A preference for deep approaches to learning has been reported in early medical students [40,41] indicating that early in their studies medical students are approaching their learning in a way that allows them to generate a meaningful understanding of the curriculum content [42].

The science students in this study were surveyed during both the first and third year of their degree. Approaches to learning are influenced by characteristics of the teacher, the student, and the learning environment [14]. Both first- and third-year science students had been exposed to a science curriculum which rewarded students for retention of factual knowledge. This type of curriculum encourages surface level learning, where students direct their focus towards the reproduction of facts and rote memorization [43]. Interestingly, the first year pre-medicine students, whose course was very similar in content, design and structure to the degree that the science students were undertaking, displayed a preference for deep approaches to learning that closely reflected that of medical students rather than their counterparts in science. Pre-medicine programs are common, particularly in the US, as a feeder streams into medicine. The pre-medicine degree at our university was directed towards high-achieving students aiming to gain a place in graduate-entry medicine. Yet, these differences in the cohorts should highlight the need for the science courses to explore new and innovative approaches that may entice a deeper approach in these students. The nature of science has fundamentally changed in the last few decades, with research now involving a wide range of reductionist to translational collaborations. There is an urgent need for science graduates to contribute to larger teams and develop skills, such as a deeper learning approach, that could feature more predominantly across the science course. In other words, there is an opportunity for science programs to further the most recent advances in collaborative and inter-disciplinary research environments to demonstrate and nurture deeper and goal orientated learning in these future scientists.

The medical students surveyed in this study were enrolled in a degree with an integrated, case-based learning curriculum design. This type of curriculum has been reported to encourage deeper approaches to learning [5,10–13]. However, the medical students in this study were surveyed during the first week of their studies and had not yet undertaken a significant amount of teaching in this format. Thus, rather than their approach to learning being influenced by curriculum design their results reflected the learning approaches they arrived into the course with, implying that other factors influence the preference for a deep learning approach seen in the medical students.

There are two main factors that could have contributed to the difference in learning approaches in the medical students: prior academic achievement and age. In medical students, a deep approach to learning has previously been shown to correlate with academic achievement [24,44,45]. Conversely, surface approaches correlate negatively with academic success [42,46]. The students who were enrolled in medicine all had a GPA > 5 as this was a minimal requirement for entry into the program. However, even the third-year science students with a GPA > 5 still had a lower preference for a deep approach to learning than their medical student counterparts suggesting that academic achievement could not solely explain the differences in learning approach.

Another feature that influenced the students learning approach and achievement orientation in the current study was age. Previous studies have shown that a deep approach to learning is more common in older students [23,47]. However, age alone cannot explain the increased preference for deep approaches to learning and the learning goal orientation seen in the students with an interest in medicine as the median age of the two student cohorts in stage one of our study were equivalent. Similarly, the two first year cohorts in stage three of this study also had similar ages.

The second major finding of this study, and also in support of our hypothesis, was that students enrolled in graduate-entry medicine, applicants to medicine and those enrolled in a pre-medicine degree had a preference for a learning goal orientation. Students with a high preference for a learning goal orientation are driven by a desire to acquire and apply new knowledge. A learning goal orientation is a particularly favorable quality for medical students, as students with a learning goal orientation can adapt their responses to challenging learning environments [30] and are more likely to be self-motivated [32]. This is particularly important early in medical school when students are faced with a number of immediate challenges including information overload [48]. In addition, students with a learning goal orientation should be more adaptable and tenacious, qualities that are required to succeed in the medical profession [49].

One of the strengths of this study was the iterative nature of the investigation. This allowed us to compare not just two groups of students but to triangulate the link between a student's desire to study medicine and their learning approach and goal orientation. By using both the study process questionnaire [14] and the achievement goal orientation survey [25], we have been able to investigate not just the learning approach in isolation but to combine that with an examination of the achievement goal orientations of the individual student cohorts. This unique combination of survey tools has allowed us to conclude that medicine attracts students with a preference for deep learning. The choice of learning approach tool could be considered a limitation of this study. Rather than the two factor Biggs SPQ [14], the tripartite learning approaches tool of Newble and Entwistle [15] could have been used. This survey tool is resolved into three factors, deep, surface and strategic. Examining this third factor could be important to future studies of medical students as some studies have shown that this facet of the learning approach correlates with success in medicine [47] while other studies have correlated success in both written and clinical examinations in medicine with deep learning [16–18,50]. A second limitation of this study is the differences in response rates for the individual student cohorts. When surveys were administered face-to-face during a teaching session the response rate was high (approximately 75%) however when the survey responses were administered online (e.g., to the applicants to medicine) the response rate was lower (25%). This difference in method for administering the survey tool was unavoidable as the applicants to medicine were not yet enrolled in any degree at our university however this could introduce a selection bias with the responses from applicants to medicine being higher due to self-selection by the responders.

5. Conclusions

In summary, the current study has explored the approaches to learning and the achievement goal orientation of five student cohorts. The results have demonstrated that students enrolled in medicine or pre-medicine and applicants to medicine have a preference for a deeper approach to learning and a learning goal orientation suggesting a driving motivation towards the acquisition of knowledge.

This is an important consideration for those responsible for the design and implementation of both science and medical curricula. As medical educators we need to design curricula that encourage students [51] to maintain their deep approach and taps into the learning goal orientation that students have developed prior to entering medical school. Notwithstanding, this study has also highlighted that the course progression of opportunities of science students may benefit from the most recent integrated approaches of medical school. Overall, ensuring that students are encouraged to develop positive and beneficial styles of learning which will help them develop into life-long learners as is expected of medical professionals.

Author Contributions: Conceptualization, K.J.M., G.E.P. and L.P.-N.; methodology, K.J.M. and G.E.P.; formal analysis, K.J.M., G.E.P., L.P.-N., D.S.; data curation, K.J.M., G.E.P., L.P.-N.; writing—original draft preparation, K.J.M.; writing—review and editing, K.J.M., G.E.P., L.P.-N., D.S.; project administration, K.J.M. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Conflicts of Interest: The authors declare no conflict of interest.

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