Learning approaches of graduate entry and undergraduate medical students, their experiences of learning, and motivations to learn: A mixed methods study

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Abstract

Students can apply different approaches to their learning and there are often many factors that may influence this approach. Few studies exist that compare the learning approaches of UK graduate entry and undergraduate medical students and how their experiences have influenced their approaches. This study used a mixed method approach to elicit the learning approaches of students and explore how they approach their learning and the factors that alter their approaches. Questionnaires were distributed to second year and fifth year medical students at the University of Liverpool. 41 second year students (6 GE, 35 UG) and 51 fifth year students (5 GE, 46 UG) participated in the survey. Four focus groups (3-8 participants) took place. Few significant differences (p<0.05) existed between the groups analysed. The focus groups demonstrated that there were some perceived differences in learning approaches and motivations to learn between graduates and undergraduates, however the gap between these groups narrowed as the students progressed through the course. Prior learning experiences appeared to impact greatly upon both learning approach and motivation. Recommendations surrounding improving students learning approaches include improving feedback and increasing student reflection. Future research should endeavour to further study the learning approaches of the second year students as they progress through the course to analyse the impact of the course upon their motivations and learning approaches.

Keywords: Graduate Entry, Undergraduate, Learning Approaches

Introduction

14 graduate entry medical programmes presently exist within the U.K., offering broader access to medical education
(James, Ferguson, Powis, Symonds & Yates, 2008; Powis, Hamilton & Gordon, 2004). In the last decade there has been a distinct shift in focus towards encouraging those from more varied socioeconomic backgrounds to train as doctors (Peile, 2007), with graduates now representing 10% of all medical students (Garrud, 2011). The contrast in life and education experience has led to postulation of whether graduates show academic differences compared with undergraduates; having a prior degree may be viewed as being advantageous when compared to their undergraduate peers (Byrne, Arnett, Farrell & Sreenan, 2014), whilst a general increased age has also been viewed as improving students' approaches to learning (Wilkinson, Wells & Bushnell, 2004).

It is of interest to academics and those teaching within medicine to have an understanding of learning approaches and the approaches used by their students (Newble & Entwistle, 1986). Environment and assessment have a great impact upon the approach adopted by students. Medicine introduces variable learning environments throughout the course – the progression from pre-clinical to clinical learning sees a shift from university based teaching to placement based teaching. Assessment pressures may also differ, and if a student is aware of the requirements of an assessment (e.g. recall of knowledge vs application of knowledge), then they will vary their approach to suit that assessment type (Newble & Entwistle, 1986).

The literature showed that graduate students have a greater tendency towards applying a deep approach to their learning than their undergraduate peers (Feeley & Biggerstaff, 2015; Sandover, Jonas-Dwyer & Marr, 2015; Knonqvist, Mäkinen, Ranne, Kääpiä, & Vainio, 2007). In support of these findings, increased age and prior degree have been found to be predictive of applying a deep approach to learning in medical students, thus favouring graduate entry students (Wilkinson et al., 2004; Cullen Power & Bury, 2015). However, there is little literature focussing on a comparison of the learning approaches of UK undergraduate and graduate entry medical students (Feeley & Biggerstaff, 2015). Furthermore, there is currently only one study of medical students that explores students' perceptions of their own learning and learning approaches, however, only graduate entry students are interviewed (Rapport et al., 2009). The aim of this study is to explore the learning approaches of medical students at Liverpool Medical School and whether any patterns or differences exist between different demographic groups. The research will also aim to explore the reasons behind the learning approaches and students' opinions surrounding their own and others' learning approaches and motivations to learn.

**Methods**

Medical students from both the A100 (undergraduate) and A101 (graduate entry) programmes in equivalent years two and five were invited to participate. The selection of years two and five allowed for comparison of the impact the course and age had on the different cohorts.

A questionnaire was distributed to the above student population during May 2016 via the students' university emails. The questionnaire was comprised of both a demographic questionnaire (fig. 1) and Biggs' Revised Two Factor Study Process Questionnaire (R-SQP-2F) (Biggs, Kember & Leung, 2001). This questionnaire is commonly used within medical education literature worldwide (Chen, Henning, Yielder, Jones, Wearn & Weller, 2015; Groves, 2005; Gurpinar, Kulac, Tetik, Akdogan & Mamakli, 2013; Kusurkar, Croiset, Galindo-Garré & Ten Cate, 2013; López, Cerveró, Rodríguez, Félix & Esteban, 2013; Sandover, Jonas-Dwyer & Marr, 2015). Currently there are no studies of UK medical students that have used the R-SPQ-2F to compare medical students of both undergraduate and graduate entry courses.
In addition to a questionnaire, students were also invited to participate in focus groups through the survey. Participants were grouped homogeneously by year group and graduate/undergraduate status creating four groups of alike individuals (Stalmeijer, McNaughton & Van Mook, 2014). The focus groups allowed for exploration of students' own thoughts, feelings and opinions of their approaches to learning and provided an opportunity to discuss their experiences with other students.

Each group consisted of between four and eight students (Stalmeijer et al., 2014). If a group had fewer than four students respond, more were recruited via further emails. Due to the busy nature of the time period that the focus groups took place, students were emailed to find out their availability to be interviewed and a convenience sampling method was used. If more than eight from one group were available at one time, the students were randomly selected using an internet randomising tool. If the most popular time period had fewer than four students available, recruitment for more was attempted via email.

Prior to the focus groups taking place, students were emailed the participant information sheet, information regarding the time and venue and a brief paragraph explaining the purpose of the focus group to give the students further context. During the focus group, students were audio recorded and the facilitator also took notes.

Once all data was collected, the audio was transcribed. Participants’ data was fully anonymised by assigning randomised numbers to each student. One student researcher analysed the focus group transcripts. The framework
method of analysis was used (Gale, Heath, Cameron, Rashid & Redwood, 2013) through the use of the N-vivo software (readily available through the University of Liverpool server. The data was then interpreted.

The proposed study received ethical approval from the University of Liverpool Institute of Learning and Teaching Ethics Review Group on 19/04/16.

Results

In total, 117 students responded to the survey distributed. Of this sample, 12 students were not from the target population (i.e. years two and five). Of the 105 responses left, 13 were incomplete, therefore discounted from analysis. Second year students (inclusive of both graduates and undergraduates) completed response rate was 14.3%; for fifth years, 17.8%. The demographics of students who responded are shown in table 1. See appendix for full results tables 2-6.

Table 1 – demographics of the student survey participants

|                  | TOTAL |      | TOTAL |
|------------------|-------|------|-------|
| **YEAR 2**       | 41    |      | 51    |
| **MALE**         | 13    |      | 13    |
| **FEMALE**       | 28    |      | 38    |
| **Graduate entry** | 6    | 4    | 2     |
| **Undergraduate entry** | 35  | 9    | 26    |
| **Foundation**   | 2     | 1    | 1     |
| **Mature student** | 1   | 1    | 0     |
| **Traditional**  | 26    | 2    | 24    |
| **Gap year**     | 6     | 3    | 3     |
| **Male**         | 5     | 3    | 2     |
| **Female**       | 46    | 10   | 36    |
| **Graduate entry** | 5    | 0    | 5     |
| **Undergraduate entry** | 46  | 10   | 36    |
| **Foundation**   | 5     | 0    | 5     |
| **Mature student** | 2   | 1    | 1     |
| **Traditional**  | 25    | 5    | 25    |
| **Gap year**     | 18    | 5    | 13    |

Graduates vs Undergraduates:

Second year graduate entry students scored significantly higher for a deep approach to learning compared to second year undergraduates (p<0.05). Second year graduates were also scored significantly higher than fifth year graduates (p<0.05). Both undergraduates and graduates scored more highly for a deep motivation than a surface motivation, but graduates scored most highly for deep overall. There was a significant difference between second year graduates and undergraduates in their deep motivation scores, with graduate scoring significantly higher (p<0.05).

Males vs Females:

Females were significantly more likely to adopt a deep approach than a surface approach (p<0.05), whereas males
demonstrated no significant preference for either approach. Significant differences were seen between graduates and undergraduates of the same gender within the second year cohort for deep approaches (p<0.05). Within the graduate fifth year population, males scored significantly higher than females for a surface approach (p<0.05). Females were significantly more likely to have a deep motivation to learn than a surface motivation (p<0.05). Both males and females scored more highly for a surface strategy than a deep strategy in learning, females significantly so (p<0.05).

**Graduate degree types:**

Students with all degree types showed a higher preference for a deep approach to learning than a surface approach. The highest score for a deep approach was from humanities students (mean=27.00), whereas the lowest came from science students (mean=24.25). Health sciences students were significantly more likely to demonstrate deep motivation than surface motivation (p<0.05). In addition, health sciences students were significantly more likely to exhibit a deep strategy in learning than a surface strategy (p<0.05). Due to there only being one respondent from a languages degree, standard deviation, therefore confidence intervals could not be accurately calculated.

| Table 7 – Focus group participants |
|-----------------------------------|
| Focus group                      | Participants |
| Year 2 Undergraduate             | 6            |
| Year 2 Graduate entry            | 8            |
| Year 5 Undergraduate             | 5            |
| Year 5 Graduate entry            | 3            |

**Focus Groups**

In total, 19 students responded to the request for focus group participants via email. The final numbers of participants can be found in table 7. Quotes included are linked with the students’ group (see fig. 2) and their identification number (1-8).

**Figure 2 – Quote coding**

Y = year group (2 or 5)  
UG = undergraduate  
GE = graduate entry  

**How students learn best**

An important theme identified was the pressure associated with passing exams. Some students felt that they learnt knowledge purely to regurgitate in order to pass their examinations: "I just need to be able to pass my exams, then later in life I can maybe read a bit more in depth" [Y5UG3]. However, within the same group another student noted that she would like to take such an approach, but found that she needed to have an understanding of basic concepts to allow herself to learn about more complex cases. This was echoed within the second year group. Whilst a fifth year graduate student completely dismissed rote-learning and talked about understanding in other contexts, a number of second year undergraduates felt that they had to use rote-learning and repetition to learn, rather than understanding and making meaning. As well as understanding, students from all groups believed that when they
applied their learning, it was beneficial in retaining and expanding their knowledge, citing clinical placement as being a good learning environment. Both graduate and undergraduates from second year felt that they hadn't been taught how to learn independently and that they didn’t receive enough support from the medical school in teaching them and guiding their learning. Whilst fifth years did emphasise that they felt some more teaching and learning support in the early years would have been useful, they also found that by the end of the course they were a lot more independent and self-sufficient in their learning: "I think in the long run I think it's made us better learners" [Y5UG2].

Barriers to effective learning

Aspects of teaching during the course were mentioned by students as being barriers to learning, mainly teaching quality and the depth of teaching. Students found that quality of teaching was highly variable, and whilst a teacher may be very knowledgeable, sometimes the teaching was pitched at the wrong level and may be too in depth. Consultants teaching was often mentioned as being too specialist for undergraduates. Concerns regarding the curriculum were also flagged as being obstacles to effective learning. Concerns were raised by all year groups regarding the ambiguity of course objectives and PBL/CBL learning objectives, finding some clinically irrelevant and others not concise enough. Lack of understanding and lack of interest in the knowledge to be learnt was a big barrier for second year undergraduates. Similarly, this group found that competition between peers, whilst it may be incentive for some, was, for the majority, a barrier; for some it caused panic learning which was ineffective.

Motivation to learn

Graduate entry students noted that compared to their previous degree, they felt that they were learning for a reason (being a doctor), whereas in their prior degrees, the knowledge was not always relevant to a prospective graduate job. Most of the students mentioned that they had an interest in what needed to be learnt, and that in itself was a motivator to learn. In addition, this motivation was increased when students received engaging teaching: "in medicine we get consultants and such who love the subject and love talking about the subject, which is a great motivation for us" [Y2GE4]. All students found that they were motivated greatly by the prospect of practicing medicine unsafely and causing harm to others. The need to not only be safe, but be competent, therefore confident to practise, was a key motivator for the final year students: "I don't want to turn up on call and not know how to assess someone or basic management of what you want to do" [Y5GE2]. Despite some students discussing competition between peers being a barrier to learning, others found that it was a motivator to learn instead: "everyone works hard, so you also have to work hard to keep up" [Y2GE8]. In addition, exams and the premise of failing them was a motivator for students, but for different reasons: graduates because they had worked hard to be a medical student and for financial reasons, and one undergraduate because she didn't want to disappoint her parents.

Motivation to study medicine

Fifth year undergraduates seemed to be greatly motivated by the prospect of being able to work all over the world. Additionally, this group discussed the importance of job security and how significant that was in a climate where it is becoming more difficult to find a graduate job. Diversity within the job and interactivity, "not just work colleagues, but patients as well" [Y5GE2], were a draw to studying and wanting to be a doctor for these students also. Most of the students cited the vocational side of the course and the eventual job as being the greatest motivation to study medicine: "I find that really satisfying, like, to have helped someone" [Y5GE2]. With regards to the academic side of the course, the fifth years regarded being able to apply their knowledge to a job and seeing their learning in action throughout their careers as being a motivation to study medicine.

Observed differences and similarities in learning and motivation between different demographic groups
Students from each group commented most upon graduates and undergraduates. The main theme regarded the previous experience that graduates had of higher education being beneficial and an advantage to learning during the medical course – more confident during placement and more used to independent learning. Undergraduates stated that they felt graduates worked a lot harder than themselves, although fifth years stated that the gap in learning and maturity levels had narrowed as they progressed through the course. Graduates noted this too, but recognised that university was a new experience for the undergraduates and that it takes them longer to settle into a higher education setting. Undergraduates were noted by the second year graduates to be less analytical in their thinking. Likewise, they noted that the undergraduates were more inclined to be learning because they were focussing upon assessments rather than out of interest for the subject. The undergraduates, on the other hand, noted that graduates had learnt how to learn, and were more mature in their approaches.

Influence of prior experiences upon learning

Graduates spoke of how their experiences of working between their first degree and current degree were beneficial to their learning in medicine. One key attribute of having worked was having seen the wider world and spent time working with people from diverse backgrounds, something which, they noted, if they had come straight from school into medicine, they would never have experienced. Correspondingly, they felt that they developed certain professional qualities from having to take on professional responsibilities: "just basic things like professionalism and being reliable" [Y5GE1].

Interestingly, graduates found that although they had mostly done degrees within a scientific field, in reality, little of their learning from the first degree was directly applicable to medicine. Instead their learning approaches and styles from the first degree were more beneficial. In contrast, undergraduates felt that their experiences at school were not very beneficial to their learning when studying medicine. Whilst they acknowledged that A-level knowledge had been useful at the beginning of the course, the clear problem appeared to be the contrast between the type of learning required at school/sixth form level and university.

Discussion

Strategic approach

The majority of results from the questionnaire showed that in reality, there is little or no difference between the preferences for a deep or surface approach/motivation/strategy. Instead most scores overlap, indicating that students are probably applying both approaches dependent on other influences. Although the R-SPQ-2F does not include it, it is worth considering that perhaps these students are actually applying a strategic approach to learning, where the students apply the approach most suitable for the assessment, and learn what will yield the best academic result (Newble & Entwistle, 1986). Students noted the changes over the year dependent upon their workload and exam pressures. Consequently, students will apply both approaches to a similar extent. This links to the concept of versatility, cited by Pask (1976) as being the key to maximising learning potential (thus academic achievement). Especially in an environment so competitive, students are learning to learn more efficiently, which in turn, leads to the application of the most suitable approach for the task. This is reflected in the comments of fifth year students discussing their progression from struggling during the early years of the course, to understanding how to learn and thriving at the latter end.

Deep approach
Although this mixed strategic approach to learning may be valuable during their time at university, after graduating and upon commencing practice as a doctor, the students should ideally be using a deep approach to learning in order to have a better understanding of complex concepts and thus treat patients to the best of their ability. In this respect, it seems that by the end of their time studying, students should be more significantly inclined towards a deep approach. However, from the results of the survey, this is not the case. The difficulty lies in how to encourage a deep approach in these students. Most studies regarding learning approaches have addressed that the course needs to facilitate a deep approach, but have not detailed the best way to do this.

Fostering a deep approach in students

An important article from the Medical Teacher journal details 12 ways in which students’ learning approaches can be enhanced (Azer, Guererro & Walsh, 2013). Whilst currently the Liverpool medical curriculum addresses many of these ideas, there is still room for improvement.

The use of group teaching methods may be helpful in encouraging students to adopt the first five items. Studies have shown that PBL encourages these behaviours, which are associated with deep learning (Azer et al., 2013; Cole, 1985; McParland, Noble & Livingston, 2004; Newble & Clark, 1986). However, since the curriculum review in 2014, PBL has been replaced by CBL (University of Liverpool, 2014). Informal peer group learning and teaching could be further encouraged within the curriculum. If students are taking on the role of a teacher in peer or near peer teaching sessions, they develop a greater sense of autonomy and competence, thus motivating and encouraging the student to learn further to develop their knowledge in order to improve their competence further (Ten Cate, Kusurkar, & Williams, 2011). By encouraging more students to teach, they gain a better understanding of the extent to which they must understand the taught subject.

The role of reflection and feedback is important; increased reflection may lead to a deeper approach to learning (Tsingos, Bosnic-Anticevich & Smith, 2013). Reflection is not necessarily an inherent skill for students, therefore can be taught within the curriculum (Tsingos et al. 2013). Taylor & Hamdy (2013)’s adult learning model suggests that reflection whilst learning should take place “in action” and “on action” (p. e1564) i.e. whilst learning new information, and whilst applying learning. Feedback also features centrally to the model, and impacts upon all stages of learning. An increased use of models such as the five-step ‘microskills’ model of clinical teaching or ‘one minute preceptor’ may be a helpful tool to incorporate more feedback and reflection into clinical teaching (Neher, Gordon, Meyer & Stevens, 1992).

Learning through simulation and learning through experience are already a large part of the Liverpool medical curriculum. With early clinical exposure and teaching, students are able to apply their learning in a clinical context. A key to maximising the learning experience is to ensure that the student feels accepted within the workplace, that they are supported within their learning, and that they are able to integrate themselves within the workplace (Yardley, Tuinissen & Dornan, 2012). Lave and Wenger’s community of practice model shows how students can become a part of a learning community and learn through legitimate peripheral participation (Yardley et al., 2012). In order for this to work, multidisciplinary teams must have an awareness of the students’ learning needs and be willing to incorporate them into the team and engage with their learning. By improving clinician’s awareness of the need to integrate students into the healthcare community, we can ensure better situational learning and experiential learning, therefore deeper learning.

Argument for reform

The question remains as to whether UK medicine should look towards purely graduate entry access to medical education. Peile (2007) argues that this would be a move in the right direction, allowing students the chance to gain
more life experience before submerging themselves into a vocation of which they have little understanding. In addition, these students would bring a maturity to their studies, as well as having an understanding of learning from their prior experiences in undergraduate education. However, George (2007) argues that by removing undergraduate medicine, we would discriminate against the school leavers and the mature students without a degree, who have achieved highly and possess the commitment to the course and the career following. In reality, there is not enough evidence to suggest that graduate medicine alone is necessarily the answer. In a climate where doctors are in short supply, yet applicants for places are increasing, reform of sorts is certainly needed, but to cut undergraduate programmes would not be beneficial. As demonstrated by the results in this study, although undergraduate medical students may not be deep learners upon arrival at medical school, they certainly progress during the course and have developed deeper learning attributes, placing them on a more level playing field with their graduate entry peers. By concentrating on encouraging students to develop the learning skills necessary to learn deeply, we can ensure that the doctors trained by the UK medical education system are able to treat patients to the best of their ability (Azer et al., 2013).

Limitations of the study

Validity could have been increased by a greater response rate and better representation of certain groups within the year group e.g. mature students and graduate entry students. The time period in which the survey was released may have hindered response rate due to many students preparing for examinations and as the survey was non-compulsory, it was not prioritised. The fifth year graduate focus group had only three participants, which may have skewed results from this group. The focus groups and subsequent analysis were undertaken by an inexpert researcher with no prior experience of facilitating a focus group and analysing the data.

Conclusion

This study has found that although graduate entry students may demonstrate a deeper approach to learning than undergraduate students, firstly, this difference is not a significant one in the majority of cases, and secondly, a major factor in the approach to learning, regardless of the medical programme, is the life and learning experience. Having only graduate entry access to medicine is not necessarily the best answer to training doctors who adopt a deep approach, as students at the end of the undergraduate course also demonstrate this. Instead, efforts to encourage students towards adopting a deep approach to learning need to be incorporated into the curriculum. The University of Liverpool currently uses many of the advised steps towards enhancing students’ learning approaches (Azer et al., 2013), however in order to for students to engage in deep learning at an earlier stage, the steps must be implemented as early as possible. Reflective learning and feedback play a great role in this and should be integrated within both university based teaching and clinical placement teaching to achieve the best outcomes.

Take Home Messages

Notes On Contributors

This study formed part of the author's Masters in Medical Education dissertation. Please contact the author for more information.
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**Appendices**

Questionnaire results

Table 2 – Learning approach scores of years 2 and 5

| YEAR GROUP | DEEP APPROACH | SURFACE APPROACH | DEEP MOTIVATION | SURFACE MOTIVATION | DEEP STRATEGY | SURFACE STRATEGY |
|------------|---------------|------------------|-----------------|-------------------|---------------|------------------|
|            | Mean | Maximum | Minimum | Range | Standard deviation | Margin of error | Upper bound of CI | Lower bound of CI | Mean | Maximum | Minimum | Range | Standard deviation | Margin of error | Upper bound of CI | Lower bound of CI | Mean | Maximum | Minimum | Range | Standard deviation | Margin of error | Upper bound of CI | Lower bound of CI |
| Year 2     | 23.54 | 30.00    | 17.00    | 13.00   | 3.53           | 1.08            | 24.62            | 22.46            |
| Year 5     | 22.75 | 30.00    | 15.00    | 15.00   | 3.54           | 0.97            | 23.72            | 21.77            |
| Year 2     | 24.29 | 38.00    | 16.00    | 22.00   | 4.74           | 1.45            | 25.75            | 22.84            |
| Year 5     | 22.37 | 32.00    | 13.00    | 19.00   | 4.09           | 1.12            | 23.49            | 21.25            |
| Year 2     | 14.29 | 20.00    | 8.00     | 12.00   | 3.38           | 1.03            | 15.33            | 13.26            |
| Year 5     | 13.31 | 21.00    | 5.00     | 16.00   | 3.73           | 1.02            | 14.34            | 12.29            |
| Year 2     | 12.98 | 22.00    | 7.00     | 15.00   | 4.03           | 1.23            | 14.21            | 11.74            |
| Year 5     | 11.27 | 25.00    | 5.00     | 20.00   | 4.05           | 1.11            | 12.38            | 10.16            |
| Year 2     | 9.24  | 18.00    | 5.00     | 13.00   | 2.73           | 0.83            | 10.08            | 8.41             |
| Year 5     | 9.43  | 21.00    | 5.00     | 16.00   | 3.40           | 0.93            | 10.36            | 8.50             |
| Year 2     | 11.32 | 17.00    | 5.00     | 12.00   | 3.09           | 0.94            | 12.26            | 10.37            |
| Year 5     | 11.10 | 18.00    | 4.00     | 14.00   | 2.95           | 0.81            | 11.91            | 10.29            |

Table 3 – Learning approaches of undergraduate and graduate entry students

* = significant (p<0.05) comparing deep/surface scores for same group

*groupxyz = significant (p<0.05) compared with same domain score of a different group (specified)
| DEEP APPROACH | Mean | Maximum | Minimum | Range | Standard deviation | Margin of error | Upper bound of CI | Lower bound of CI |
|---------------|------|---------|---------|-------|--------------------|-----------------|-------------------|-------------------|
| Y2 UG *Y2GE   | 23.03 | 30.00   | 17.00   | 13.00 | 3.52               | 1.17            | 24.19             | 21.86             |
| Y2 GE *Y2UG, Y5U, Y5GE | 26.50 | 29.00   | 25.00   | 4.00  | 1.76               | 1.41            | 27.91             | 25.09             |
| Y5 UG *Y2GE   | 22.83 | 30.00   | 15.00   | 15.00 | 3.66               | 1.06            | 23.88             | 21.77             |
| Y5 GE *Y2GE   | 22.00 | 24.00   | 18.00   | 6.00  | 2.35               | 2.06            | 24.06             | 19.94             |
| UG (2+5)      | 22.91 | 30.00   | 15.00   | 15.00 | 3.58               | 0.78            | 23.69             | 22.13             |
| GE (2+5)      | 24.45 | 29.00   | 18.00   | 11.00 | 3.05               | 1.80            | 26.25             | 22.65             |

| SURFACE APPROACH | Mean | Maximum | Minimum | Range | Standard deviation | Margin of error | Upper bound of CI | Lower bound of CI |
|-------------------|------|---------|---------|-------|--------------------|-----------------|-------------------|-------------------|
| Y2 UG             | 24.29 | 38.00   | 16.00   | 22.00 | 4.80               | 1.59            | 25.88             | 22.70             |
| Y2 GE             | 24.33 | 33.00   | 20.00   | 13.00 | 4.84               | 3.88            | 28.21             | 20.46             |
| Y5 UG             | 22.52 | 32.00   | 13.00   | 19.00 | 4.20               | 1.21            | 23.74             | 21.31             |
| Y5 GE             | 21.00 | 24.00   | 18.00   | 6.00  | 2.83               | 2.48            | 23.48             | 18.52             |
| UG (2+5)          | 23.28 | 38.00   | 13.00   | 25.00 | 4.53               | 0.99            | 24.27             | 22.30             |
| GE (2+5)          | 22.82 | 33.00   | 18.00   | 15.00 | 4.24               | 2.50            | 25.32             | 20.31             |

| DEEP MOTIVATION | Mean | Maximum | Minimum | Range | Standard deviation | Margin of error | Upper bound of CI | Lower bound of CI |
|-----------------|------|---------|---------|-------|--------------------|-----------------|-------------------|-------------------|
| Y2 UG *Y2GE     | 13.83 | 19.00   | 8.00    | 11.00 | 3.32               | 1.10            | 14.93             | 12.73             |
| Y2 GE *Y2UG     | 17.00 | 20.00   | 13.00   | 7.00  | 2.45               | 1.96            | 18.96             | 15.04             |
| Y5 UG            | 13.26 | 21.00   | 5.00    | 16.00 | 3.86               | 1.12            | 14.38             | 12.15             |
| Y5 GE            | 13.80 | 17.00   | 10.00   | 7.00  | 2.49               | 2.18            | 15.98             | 11.62             |
| UG (2+5)         | 13.51 | 21.00   | 5.00    | 16.00 | 3.63               | 0.79            | 14.30             | 12.72             |
| GE (2+5)         | 15.55 | 20.00   | 10.00   | 10.00 | 2.88               | 1.70            | 17.25             | 13.85             |

| SURFACE MOTIVATION | Mean | Maximum | Minimum | Range | Standard deviation | Margin of error | Upper bound of CI | Lower bound of CI |
|--------------------|------|---------|---------|-------|--------------------|-----------------|-------------------|-------------------|
| Y2 UG              | 12.89 | 22.00   | 7.00    | 15.00 | 4.11               | 1.36            | 14.25             | 11.52             |
| Y2 GE              | 13.50 | 20.00   | 10.00   | 10.00 | 3.83               | 3.07            | 16.57             | 10.43             |
| Strategy  | Y5 UG  | 11.35 | 25.00 | 5.00 | 20.00 | 4.09 | 1.18 | 12.53 | 10.16 |
|----------|--------|-------|-------|------|-------|------|------|-------|------|
|          | Y5 GE  | 10.60 | 17.00 | 7.00 | 10.00 | 3.91 | 3.43 | 14.03 | 7.17  |
|          | UG (2+5) | 12.01 | 25.00 | 5.00 | 20.00 | 4.15 | 0.90 | 12.92 | 11.11 |
|          | GE (2+5) | 12.18 | 20.00 | 7.00 | 13.00 | 3.97 | 2.35 | 14.53 | 9.84  |

| Strategy  | DEEP STRATEGY | Mean | Maximum | Minimum | Range | Standard deviation | Margin of error | Upper bound of CI | Lower bound of CI |
|----------|---------------|------|---------|---------|-------|-------------------|-----------------|------------------|------------------|
|          | Y2 UG         | 9.20 | 18.00   | 5.00    | 13.00 | 2.85              | 0.94            | 10.14            | 8.26             |
|          | Y2 GE         | 9.50 | 12.00   | 6.00    | 6.00  | 2.07              | 1.66            | 11.16            | 7.84             |
|          | Y5 UG         | 9.57 | 21.00   | 5.00    | 16.00 | 3.55              | 1.03            | 10.59            | 8.54             |
|          | Y5 GE         | 8.20 | 9.00    | 7.00    | 2.00  | 0.84              | 0.73            | 8.93             | 7.47             |
|          | UG (2+5)      | 9.41 | 21.00   | 5.00    | 16.00 | 3.25              | 0.71            | 10.12            | 8.70             |
|          | GE (2+5)      | 8.91 | 12.00   | 6.00    | 6.00  | 1.70              | 1.00            | 9.91             | 7.90             |

| Strategy  | SURFACE STRATEGY | Mean | Maximum | Minimum | Range | Standard deviation | Margin of error | Upper bound of CI | Lower bound of CI |
|----------|------------------|------|---------|---------|-------|-------------------|-----------------|------------------|------------------|
|          | Y2 UG            | 11.40 | 17.00   | 5.00    | 12.00 | 3.18              | 1.05            | 12.45            | 10.35            |
|          | Y2 GE            | 10.83 | 14.00   | 7.00    | 7.00  | 2.64              | 2.11            | 12.95            | 8.72             |
|          | Y5 UG            | 11.17 | 18.00   | 4.00    | 14.00 | 3.04              | 0.88            | 12.05            | 10.29            |
|          | Y5 GE            | 10.40 | 12.00   | 7.00    | 5.00  | 2.07              | 1.82            | 12.22            | 8.58             |
|          | UG (2+5)         | 11.27 | 18.00   | 4.00    | 14.00 | 3.09              | 0.67            | 11.94            | 10.60            |
|          | GE (2+5)         | 10.64 | 14.00   | 7.00    | 7.00  | 2.29              | 1.35            | 11.99            | 9.28             |
Table 4 – Learning approaches of males and females

| DEEP APPROACH | Mean | Maximum | Minimum | Range | Standard deviation | Margin of error | Upper bound of confidence interval | Lower bound of confidence interval |
|---------------|------|---------|---------|-------|-------------------|-----------------|-----------------------------------|-----------------------------------|
| Y2 UG M       | 21.78| 28.00   | 18.00   | 10.00 | 3.19              | 2.09            | 23.86                             | 19.69                             |
| Y2 UG F       | 23.59| 30.00   | 17.00   | 13.00 | 3.58              | 1.35            | 24.94                             | 22.24                             |
| Y2 GE M       | 25.75| 28.00   | 25.00   | 3.00  | 1.50              | 1.47            | 27.22                             | 24.28                             |
| Y2 GE F       | 28.00| 29.00   | 27.00   | 2.00  | 1.41              | 1.96            | 29.96                             | 26.04                             |
| Y5 UG M       | 23.60| 30.00   | 18.00   | 12.00 | 4.03              | 2.50            | 26.10                             | 21.10                             |
| Y5 UG F       | 22.61| 30.00   | 15.00   | 15.00 | 3.58              | 1.17            | 23.78                             | 21.44                             |
| Y5 GE M       | 21.33| 23.00   | 18.00   | 5.00  | 2.89              | 3.27            | 24.60                             | 18.07                             |
| Y5 GE F       | 23.00| 24.00   | 22.00   | 2.00  | 1.41              | 1.96            | 24.96                             | 21.04                             |
| Y2 M          | 23.00| 28.00   | 18.00   | 10.00 | 3.32              | 1.80            | 24.80                             | 21.20                             |
| Y2 F          | 23.90| 30.00   | 17.00   | 13.00 | 3.64              | 1.32            | 25.22                             | 22.57                             |
| Y5 M          | 23.08| 30.00   | 18.00   | 12.00 | 3.82              | 2.08            | 25.15                             | 21.00                             |
| Y5 F          | 22.63| 30.00   | 15.00   | 15.00 | 3.49              | 1.11            | 23.74                             | 21.52                             |
| M             | 23.04| 30.00   | 18.00   | 12.00 | 3.50              | 1.35            | 24.39                             | 21.69                             |
| F             | 23.18| 30.00   | 15.00   | 15.00 | 3.58              | 0.86            | 24.04                             | 22.32                             |
| SURFACE APPROACH | Mean | Maximum | Minimum | Range | Standard deviation | Margin of error | Upper bound of confidence interval | Lower bound of confidence interval |
|------------------|------|---------|---------|-------|-------------------|----------------|-----------------------------------|-----------------------------------|
| Y2 UG M          | 22.33| 26.00   | 17.00   | 9.00  | 3.24              | 2.12           | 24.45                             | 20.22                             |
| DEEP MOTIVATION | Mean  | Maximum | Minimum | Range  | Standard deviation | Margin of error | Upper bound of confidence interval | Lower bound of confidence interval |
|-----------------|-------|---------|---------|--------|--------------------|-----------------|-----------------------------------|----------------------------------|
| Y2 UG M         | 12.78 | 19.00   | 10.00   | 9.00   | 3.53               | 2.30            | 15.08                             | 10.47                            |
| Y2 UG F         | 14.30 | 19.00   | 8.00    | 11.00  | 3.22               | 1.21            | 15.51                             | 13.08                            |
| Y2 GE M         | 16.25 | 19.00   | 13.00   | 6.00   | 2.50               | 2.45            | 18.70                             | 13.80                            |
| Y2 GE F         | 18.50 | 20.00   | 17.00   | 3.00   | 2.12               | 2.94            | 21.44                             | 15.56                            |
| Y5 UG M         | 12.90 | 19.00   | 8.00    | 11.00  | 3.70               | 2.29            | 15.19                             | 10.61                            |
| Y5 UG F         | 13.36 | 21.00   | 5.00    | 16.00  | 3.95               | 1.29            | 14.65                             | 12.07                            |
| Y5 GE M         | 12.67 | 14.00   | 10.00   | 4.00   | 2.31               | 2.61            | 15.28                             | 10.05                            |
| Y5 GE F         | 15.50 | 17.00   | 14.00   | 3.00   | 2.12               | 2.94            | 18.44                             | 12.56                            |
| Y2 M            | 13.85 | 19.00   | 10.00   | 9.00   | 3.56               | 1.93            | 15.78                             | 11.91                            |
| Y2 F            | 14.59 | 20.00   | 8.00    | 12.00  | 3.31               | 1.21            | 15.79                             | 13.38                            |
| Y5 M            | 12.85 | 19.00   | 8.00    | 11.00  | 3.34               | 1.81            | 14.66                             | 11.03                            |
| Y5 F            | 13.47 | 21.00   | 5.00    | 16.00  | 3.89               | 1.24            | 14.71                             | 12.24                            |
| M               | 13.35 | 19.00   | 8.00    | 11.00  | 3.42               | 1.31            | 14.66                             | 12.03                            |
| SURFACE MOTIVATION | Mean  | Maximum | Minimum | Range  | Standard deviation | Margin of error | Upper bound of confidence interval | Lower bound of confidence interval |
|--------------------|-------|---------|---------|--------|-------------------|----------------|-----------------------------------|-----------------------------------|
| Y2 UG M            | 12.33 | 20.00   | 7.00    | 13.00  | 4.06              | 2.65           | 14.99                            | 9.68                              |
| Y2 UG F            | 13.00 | 22.00   | 7.00    | 15.00  | 4.13              | 1.56           | 14.56                            | 11.44                             |
| Y2 GE M            | 14.75 | 20.00   | 10.00   | 10.00  | 4.27              | 4.19           | 18.94                            | 10.56                             |
| Y2 GE F            | 11.00 | 11.00   | 11.00   | 0.00   | 0.00              | 0.00           | 11.00                            | 11.00                             |
| Y5 UG M            | 13.00 | 25.00   | 6.00    | 19.00  | 5.91              | 3.66           | 16.66                            | 9.34                              |
| Y5 UG F            | 10.89 | 20.00   | 5.00    | 15.00  | 3.40              | 1.11           | 12.00                            | 9.78                              |
| Y5 GE M            | 12.67 | 17.00   | 10.00   | 7.00   | 3.79              | 4.28           | 16.95                            | 8.38                              |
| Y5 GE F            | 7.50  | 8.00    | 7.00    | 1.00   | 0.71              | 0.98           | 8.48                             | 6.52                              |
| Y2 M               | 13.08 | 20.00   | 7.00    | 13.00  | 4.11              | 2.24           | 15.31                            | 10.84                             |
| Y2 F               | 12.86 | 22.00   | 7.00    | 15.00  | 4.02              | 1.46           | 14.32                            | 11.40                             |
| Y5 M               | 12.92 | 25.00   | 6.00    | 19.00  | 5.35              | 2.91           | 15.83                            | 10.02                             |
| Y5 F               | 10.71 | 20.00   | 5.00    | 15.00  | 3.40              | 1.08           | 11.79                            | 9.63                              |
| M                  | 13.00 | 25.00   | 6.00    | 19.00  | 4.67              | 1.80           | 14.80                            | 11.20                             |
| F                  | 11.64 | 22.00   | 5.00    | 17.00  | 3.80              | 0.91           | 12.55                            | 10.73                             |
| DEEP STRATEGY | Mean | Maximum | Minimum | Range | Standard deviation | Margin of error | Upper bound of confidence interval | Lower bound of confidence interval |
|---------------|------|---------|---------|-------|-------------------|----------------|-----------------------------------|-----------------------------------|
| Y2 UG M       | 9.00 | 18.00   | 5.00    | 13.00 | 4.03              | 2.63           | 11.63                            | 6.37                              |
| Y2 UG F       | 9.30 | 16.00   | 5.00    | 11.00 | 2.37              | 0.89           | 10.19                            | 8.40                              |
| Y2 GE M       | 9.50 | 12.00   | 6.00    | 6.00  | 2.65              | 2.59           | 12.09                            | 6.91                              |
| Y2 GE F       | 9.50 | 10.00   | 9.00    | 1.00  | 0.71              | 0.98           | 10.48                            | 8.52                              |
| Y5 UG M       | 10.70| 21.00   | 6.00    | 15.00 | 5.01              | 3.11           | 13.81                            | 7.59                              |
| Y5 UG F       | 9.25 | 17.00   | 5.00    | 12.00 | 3.05              | 1.00           | 13.81                            | 8.25                              |
| Y5 GE M       | 8.67 | 9.00    | 8.00    | 1.00  | 0.58              | 0.65           | 9.32                             | 8.01                              |
| Y5 GE F       | 7.50 | 8.00    | 7.00    | 1.00  | 0.71              | 0.98           | 8.48                             | 6.52                              |
| Y2 M          | 9.15 | 18.00   | 5.00    | 13.00 | 3.56              | 1.93           | 11.09                            | 7.22                              |
| Y2 F          | 9.31 | 16.00   | 5.00    | 11.00 | 2.29              | 0.83           | 10.14                            | 8.48                              |
| Y5 M          | 10.23| 21.00   | 6.00    | 15.00 | 4.44              | 2.41           | 12.64                            | 7.82                              |
| Y5 F          | 9.16 | 17.00   | 5.00    | 12.00 | 2.99              | 0.95           | 10.11                            | 8.21                              |
| M             | 9.69 | 21.00   | 5.00    | 16.00 | 3.98              | 1.53           | 11.22                            | 8.16                              |
| F*            | 9.22 | 17.00   | 5.00    | 12.00 | 2.69              | 0.64           | 9.87                             | 8.58                              |
| SURFACE STRATEGY | Mean | Maximum | Minimum | Range | Standard deviation | Margin of error | Upper bound of confidence interval | Lower bound of confidence interval |
|------------------|------|---------|---------|-------|-------------------|----------------|-----------------------------------|-----------------------------------|
| Y2 UG M          | 10.00 | 17.00  | 5.00   | 12.00 | 3.57              | 2.33           | 12.33                             | 7.67                              |
| Y2 UG F          | 11.78 | 16.00  | 6.00   | 10.00 | 2.95              | 1.11           | 12.89                             | 10.66                             |
| Y2 GE M          | 11.00 | 14.00  | 7.00   | 7.00  | 3.16              | 3.10           | 14.10                             | 7.90                              |
| Y2 GE F          | 10.50 | 12.00  | 9.00   | 3.00  | 2.12              | 2.94           | 13.44                             | 7.56                              |
| Y5 UG M          | 10.30 | 16.00  | 4.00   | 12.00 | 3.65              | 2.26           | 12.56                             | 8.04                              |
| Y5 UG F          | 11.42 | 18.00  | 5.00   | 13.00 | 2.86              | 0.94           | 12.35                             | 10.48                             |
| Y5 GE M          | 10.33 | 12.00  | 7.00   | 5.00  | 2.89              | 3.27           | 13.60                             | 7.07                              |
| Y5 GE F          | 10.50 | 11.00  | 10.00  | 1.00  | 0.71              | 0.98           | 11.48                             | 9.52                              |
| Y2 M             | 10.31 | 17.00  | 5.00   | 12.00 | 3.35              | 1.82           | 12.13                             | 8.49                              |
| Y2 F             | 11.69 | 16.00  | 6.00   | 10.00 | 2.89              | 1.05           | 12.74                             | 10.64                             |
| Y5 M             | 10.31 | 16.00  | 4.00   | 12.00 | 3.38              | 1.84           | 12.14                             | 8.47                              |
| Y5 F             | 11.37 | 18.00  | 5.00   | 13.00 | 2.79              | 0.89           | 12.26                             | 10.48                             |
| M                | 10.31 | 17.00  | 4.00   | 13.00 | 3.30              | 1.27           | 11.57                             | 9.04                              |
| F                | 11.51 | 18.00  | 5.00   | 13.00 | 2.82              | 0.68           | 12.18                             | 10.83                             |
Table 5 – Learning approaches of traditional and non-traditional students

*groupxyz = significant (p<0.05) compared with same domain score of a different group (specified)
+ = significant (p<0.05) comparing deep/surface scores for same group

| DEEP APPROACH      | Mean  | Maximum | Minimum | Range  | Standard deviation | Margin of error | Upper bound of CI | Lower bound of CI |
|--------------------|-------|---------|---------|--------|--------------------|-----------------|-------------------|-------------------|
| Y2 Traditional school leaver | 22.88 | 30.00   | 17.00   | 13.00  | 3.55               | 1.36            | 24.25             | 21.52             |
| Y2 Non-traditional | 24.67 | 29.00   | 19.00   | 10.00  | 3.31               | 1.67            | 26.34             | 22.99             |
| Y5 Traditional school leaver | 22.70 | 30.00   | 15.00   | 15.00  | 3.92               | 1.60            | 24.30             | 21.09             |
| Y5 Non-traditional | 22.79 | 28.00   | 16.00   | 12.00  | 3.27               | 1.21            | 24.00             | 21.57             |
| Traditional school leaver (2+5) | 22.80 | 30.00   | 15.00   | 15.00  | 3.69               | 1.03            | 23.83             | 21.76             |
| Non-traditional (2+5) | 23.44 | 29.00   | 16.00   | 13.00  | 3.37               | 1.01            | 24.45             | 22.43             |
| SURFACE APPROACH | Mean | Maximum | Minimum | Range | Standard deviation | Margin of error | Upper bound of CI | Lower bound of CI |
|------------------|------|---------|---------|-------|-------------------|-----------------|------------------|------------------|
| Y2 Traditional school leaver | 24.42 | 38.00 | 16.00 | 22.00 | 5.14 | 1.98 | 26.40 | 22.45 |
| Y2 Non-traditional | 24.07 | 33.00 | 18.00 | 15.00 | 4.13 | 2.09 | 26.16 | 21.98 |
| Y5 Traditional school leaver | 22.39 | 31.00 | 18.00 | 13.00 | 3.97 | 1.62 | 24.02 | 20.77 |
| Y5 Non-traditional | 22.36 | 32.00 | 13.00 | 19.00 | 4.25 | 1.58 | 23.93 | 20.78 |
| Traditional school leaver (2+5) | 23.47 | 38.00 | 16.00 | 22.00 | 4.70 | 1.31 | 24.78 | 22.15 |
| Non-traditional (2+5) | 22.95 | 33.00 | 13.00 | 20.00 | 4.24 | 1.27 | 24.22 | 21.69 |

| DEEP MOTIVATION | Mean | Maximum | Minimum | Range | Standard deviation | Margin of error | Upper bound of CI | Lower bound of CI |
|------------------|------|---------|---------|-------|-------------------|-----------------|------------------|------------------|
| Y2 Traditional school leaver | 13.73 | 19.00 | 8.00 | 11.00 | 3.17 | 1.22 | 14.95 | 12.51 |
| Y2 Non-traditional | 15.27 | 20.00 | 10.00 | 10.00 | 3.61 | 1.83 | 17.10 | 13.44 |
| Y5 Traditional school leaver | 13.00 | 20.00 | 5.00 | 15.00 | 4.08 | 1.67 | 14.67 | 11.33 |
| Y5 Non-traditional | 13.57 | 21.00 | 7.00 | 14.00 | 3.48 | 1.29 | 14.86 | 12.28 |
| Traditional school leaver (2+5) | 13.39 | 20.00 | 5.00 | 15.00 | 3.60 | 1.01 | 14.40 | 12.38 |
| Non-traditional (2+5) | 14.16 | 21.00 | 7.00 | 14.00 | 3.58 | 1.07 | 15.23 | 13.09 |
| SURFACE MOTIVATION | Mean   | Maximum | Minimum | Range | Standard deviation | Margin of error | Upper bound of CI | Lower bound of CI |
|--------------------|--------|---------|---------|-------|--------------------|----------------|------------------|------------------|
| Y2 Traditional school leaver | 12.81  | 22.00   | 7.00    | 15.00 | 4.27               | 1.64           | 14.45            | 11.17            |
| Y2 Non-traditional    | 13.27  | 20.00   | 9.00    | 11.00 | 3.71               | 1.88           | 15.15            | 11.39            |
| Y5 Traditional school leaver | 11.65  | 25.00   | 5.00    | 20.00 | 4.55               | 1.86           | 13.51            | 9.79             |
| Y5 Non-traditional    | 10.96  | 18.00   | 6.00    | 12.00 | 3.64               | 1.35           | 12.31            | 9.62             |
| Traditional school leaver (2+5) | 12.27  | 25.00   | 5.00    | 20.00 | 4.40               | 1.23           | 13.50            | 11.03            |
| Non-traditional (2+5) | 11.77  | 20.00   | 6.00    | 14.00 | 3.78               | 1.13           | 12.90            | 10.64            |

| DEEP STRATEGY  | Mean   | Maximum | Minimum | Range | Standard deviation | Margin of error | Upper bound of CI | Lower bound of CI |
|----------------|--------|---------|---------|-------|--------------------|----------------|------------------|------------------|
| Y2 Traditional school leaver | 9.15   | 16.00   | 5.00    | 11.00 | 2.63               | 1.01           | 10.17            | 8.14             |
| Y2 Non-traditional    | 9.40   | 18.00   | 5.00    | 13.00 | 2.97               | 1.50           | 10.90            | 7.90             |
| Y5 Traditional school leaver | 9.70   | 21.00   | 5.00    | 16.00 | 3.94               | 1.61           | 11.30            | 8.09             |
| Y5 Non-traditional    | 9.21   | 17.00   | 5.00    | 12.00 | 2.95               | 1.09           | 10.31            | 8.12             |
| Traditional school leaver (2+5) | 9.41   | 21.00   | 5.00    | 16.00 | 3.28               | 0.92           | 10.33            | 8.49             |
| Non-traditional (2+5) | 9.28   | 18.00   | 5.00    | 13.00 | 2.92               | 0.87           | 10.15            | 8.41             |
| SURFACE STRATEGY | Mean | Maximum | Minimum | Range | Standard deviation | Margin of error | Upper bound of CI | Lower bound of CI |
|------------------|------|---------|---------|-------|--------------------|----------------|-------------------|------------------|
| Y2 Traditional school leaver | 11.62 | 17.00 | 6.00 | 11.00 | 3.10 | 1.19 | 12.81 | 10.42 |
| Y2 Non-traditional | 10.80 | 16.00 | 5.00 | 11.00 | 3.10 | 1.57 | 12.37 | 9.23 |
| Y5 Traditional school leaver | 10.74 | 17.00 | 4.00 | 13.00 | 3.26 | 1.33 | 12.07 | 9.41 |
| Y5 Non-traditional | 11.39 | 18.00 | 7.00 | 11.00 | 2.70 | 1.00 | 12.39 | 10.39 |
### Table 6 – Learning approaches of different graduate degree types

|                | Degree          | Number of students | Mean  | Maximum | Minimum | Range | Standard deviation | Margin of error | Upper bound of CI | Lower bound of CI |
|----------------|-----------------|--------------------|-------|---------|---------|-------|--------------------|-----------------|-------------------|------------------|
| **DEEP APPROACH** | Health Sciences | 7                  | 24.29 | 28.00   | 22.00   | 6.00  | 1.98               | 1.46            | 25.75             | 22.82            |
|                 | Sciences        | 8                  | 24.25 | 29.00   | 18.00   | 11.00 | 3.77               | 2.61            | 26.86             | 21.64            |
|                 | Humanities      | 2                  | 27.00 | 30.00   | 24.00   | 6.00  | 4.24               | 5.88            | 32.88             | 21.12            |
|                 | Languages       | 1                  | 26.00 | 26.00   | 26.00   | 0.00  | -                  | -               | -                 | -                |
| **SURFACE APPROACH** | Health Sciences | 7                  | 22.57 | 26.00   | 18.00   | 8.00  | 2.82               | 2.09            | 24.66             | 20.48            |
|                 | Sciences        | 8                  | 23.50 | 33.00   | 18.00   | 15.00 | 4.57               | 3.16            | 26.66             | 20.34            |
|                 | Humanities      | 2                  | 26.50 | 30.00   | 23.00   | 7.00  | 4.95               | 6.86            | 33.36             | 19.64            |
|                 | Languages       | 1                  | 26.00 | 26.00   | 26.00   | 0.00  | -                  | -               | -                 | -                |
| **DEEP MOTIVATION** | Health Sciences | 7                  | 16.29 | 19.00   | 14.00   | 5.00  | 2.36               | 1.75            | 18.03             | 14.54            |
|                 | Sciences        | 8                  | 15.00 | 20.00   | 10.00   | 10.00 | 3.30               | 2.28            | 17.28             | 12.72            |
|                 | Humanities      | 2                  | 18.00 | 20.00   | 16.00   | 4.00  | 2.83               | 3.92            | 21.92             | 14.08            |
|                 | Languages       | 1                  | 18.00 | 18.00   | 18.00   | 0.00  | -                  | -               | -                 | -                |
| **SURFACE MOTIVATION** | Health Sciences | 7                  | 10.29 | 13.00   | 7.00    | 6.00  | 2.29               | 1.70            | 11.98             | 8.59             |
|                 | Sciences        | 8                  | 13.00 | 20.00   | 7.00    | 13.00 | 4.28               | 2.96            | 15.96             | 10.04            |
|                 | Humanities      | 2                  | 12.50 | 14.00   | 11.00   | 3.00  | 2.12               | 2.94            | 15.44             | 9.56             |
|                 | Languages       | 1                  | 10.00 | 10.00   | 10.00   | 0.00  | -                  | -               | -                 | -                |
### Declaration of Interest

*The author has declared that there are no conflicts of interest.*