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Factors influencing students' perceptions of graduate attribute acquisition in a multidisciplinary honours track in a Dutch university

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This article studies the relationship between students' perceptions of teaching and learning in a multidisciplinary honours programme and their impact on graduate attributes acquisition. The study, conducted among 73 honours students in a Dutch research university, evaluates perceived improvement in graduate attributes through annually collected survey data pertaining to student motivation, perception of the teaching and learning environment, engagement in the programme and registered course marks. The evaluation study reveals that to the extent of the perceived development of graduate attributes, three factors play crucial roles: students' performance motivation, the amount of teacher support in creative and critical thinking, and students' inclination to approach the honours track as a learning community.

Keywords: academic development; graduate attributes; honours programme; multidisciplinary; postgraduate; university students

Introduction

Honours programmes are booming business in higher education (Long, 2012). In contrast with, for example, the USA or Australia, most research universities in the Netherlands provide an honours programme as an additional track, beyond students' regular bachelor's and master's programmes. These programmes should create further opportunities for high-ability students to satisfy students' social and scientific interests and to enhance the development of graduate attributes. The tracks roughly consist of monodisciplinary and interdisciplinary or multidisciplinary tracks (Van Eijl, Wolfensberger, van Tilborgh, & Pilot, 2005). Yet, despite the popularity of honours programmes, little research has been undertaken to disentangle which student characteristics and which aspects of educational practices in honours programmes enable high performing students to further their academic development.

Accordingly, we report on an analysis of experiences with a new multidisciplinary, extra-curricular honours track based on principles proposed by Renzulli (1977, 2000). In this study we used data from the first cohort of students that started in 2009 and completed the track in 2012. The key research question for this study is:

Which teaching and learning conditions affect students' academic performance and perceived development of graduate attributes in an extra-curricular multidisciplinary honours programme?

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Study framework

In 2000, the European Council stated the ambition to make Europe ‘the most competitive and dynamic knowledge-based economy in the world’ by 2010. As it was clear that to be able to realize this ambition a larger higher educated workforce would be needed, many European countries developed policies on widening participation aiming at increasing numbers of higher education students. A side effect of these policies is an increase in the influx of less-prepared students and students who have difficulties coping with university demands. However, at the same time concerns about higher education expenditures and completion rates have prompted policy-makers to implement new funding policies to pressure universities to encourage students to graduate on time (Eurydice, 2012). As a result of these policies, there is growing pressure on universities to redesign bachelor’s degree programmes to provide more coherent education pathways and more transparent assessment procedures.

Although programme improvements may result in increased graduation rates, there are also risks that high-ability students become less or insufficiently challenged. Teachers often feel insufficiently capable to support diverse groups of students and express beliefs that some students ‘should not be at university at all’ (see Biggs, 2012, p. 39). There seems to be a lack of support at all educational levels for high-ability students to develop their talents, especially in the Netherlands (Education Inspectorate, 2013). For university education it is likely that for this specific group the development of their graduate attributes will not receive enough attention. Graduate attributes refer to generic qualities and skills, such as written and oral communication, collaboration, scholarship, and creative and critical thinking (Barrie, 2006, 2012; Davies, 2013; McNeil et al., 2012; Moalosi, Molokwane, & Mothibedi, 2012; Steur, Jansen, & Hofman, 2012). There is an on-going debate about how generic or how context dependent graduate attributes are (Jones, 2013) and whether graduate attributes must be seen as a set of employability skills (Daniels & Brooker, 2014). Dutch research universities, based on the Dublin descriptors,¹ aim at the above-mentioned generic skills that concur with the definition of Bowden and colleagues (2000 in Hughes & Barrie, 2010), who state that:

generic graduate attributes are the qualities, skills and understandings a university community agrees its students should develop during their time with the institution. These attributes include but go beyond the disciplinary expertise or technical knowledge that has traditionally formed the core of most university courses. They are qualities that also prepare graduates as agents of social good in an unknown future.

This relates to the enabling orientation Barrie (2006) described as the attribute to meet new challenges in situations and with the use of knowledge beyond the original field of study or discipline.

The introduction of extra-curricular honours programmes may offer an efficient means to stimulate high-ability students to engage in in-depth study activities and accelerate their graduate attribute development (GAD) (see De la Harpe & David, 2012, p. 506). For the honours track in this study, this means that students during their bachelor’s programme get the opportunity to develop graduate attributes that normally would be the outcome of the master’s programme. Whether honours programmes succeed in doing so depends on three factors: (1) the types of educational activities used to address the learning needs of high-ability students, (2) the teaching and learning process and (3) the adequacy of the selection and admission process.

Requirements of teaching and learning to intensify graduate development

Two principles that seem beneficial for the further academic development of high-ability students are elaboration of students' conceptual knowledge about topics and problems in focal areas of interest and skills development. The elaboration of conceptual knowledge appears most likely as a result of teaching that focuses on critical and creative thinking skills (Davies, 2013; Gallagher, 1994; VanTassel-Baska, 2003). Acceleration of students' GAD might be achieved by simultaneously developing oral, writing and collaboration skills. In turn, to provoke critical and creative thinking and to support the development of graduate attributes, a carefully designed track in which teachers must provoke certain learning behaviours is essential. Beyond transmitting information and clarifying concepts, teachers should serve as questioners, raising interpretive issues for discussion and debate. According to VanTassel-Baska (2003), in working with high-ability students teachers should also incorporate activities, such as brainstorming, to foster problem-solving and understanding of interdisciplinary topics (i.e., key concepts). Simultaneously, teachers are responsible for investigating issues in close collaboration with students. Creative and critical thinking preferably take place in group contexts, to enable students to learn from one another (Biggs, 2003; Paul & Elder, 2008). A learning and teaching context that supplies active and creative learning tasks will enhance the level of engagement and promote higher order learning (Biggs, 2012).

Smith and Bath (2006) further highlight the importance of students' perspectives on their studies as learning communities. Interactions between students and teachers seem to help students acquire graduate attributes more readily through engagement in a learning community (LC). Collaborative learning (CL) can be an especially effective teaching device in higher education, when students engage in discussion, evaluation and clarification of one another's ideas, while teachers take care to discourage social time-wasting (Carlsmith & Cooper, 2002; Gokhale, 1995; Meyers, 1997). When teachers ensure that students agree to work on a shared plan of action and create proper conditions for individual accountability, project collaborations can successfully advance the development of problem-solving, critical and creative thinking and research skills (see Slavin, 1996).

Student demands: selection and admission issues

Since an extra-curricular honours track increases students' academic workload, it requires from students the ability to study effectively. For that reason, selection and admission to the track based on good study results is a necessary, albeit not always sufficient, safeguard for successful participation in the programme and the completion thereof. Persisting achievement motivation, in particular motivation based on ambitious performance goals, and self-regulation skills are further important requirements for successful participation (Elliot, 2005; Pintrich, 2004). The importance of both student characteristics lies in the fact that students need to pass their examinations in their regular bachelor studies easily in order to be able to allocate sufficient time for tasks and projects in the honours programme which provide for the development of graduate attributes (Zimmerman & Schunk, 2001). Although theoretically ambitious performance goals might elicit less openness in information exchange with other students (see Poortvliet, Janssen, Van Yperen, & Van de Vliert, 2007), given the demanding nature of honours tracks a strong

orientation on performance goals seems a prerequisite for effective graduate attributes development.

Design features of the multidisciplinary honours track under study

Renzulli's enrichment triad model (ETM) has been used as the basis for the design of the bachelor's honours programme at the University of Groningen. Although the ETM has been implemented primarily in primary and secondary education, the ETM has also been proposed as a viable education model in a university setting to support the further academic development of high-ability students and to stimulate their creative productivity (Garcia-Cepero, 2008). The ETM stipulates three interrelated types of enrichment activities. The first type of enrichment serves to expose students to subject matter not covered in the regular curriculum. In the bachelor's honours programme, type I enrichment consists of a set of annually delivered obligatory course units aimed at deepening students' disciplinary knowledge and two optional course units in a different discipline than their own about interesting social or scientific issues. By attending these 'broadening courses' students meet students from other disciplines who share the same interests. Type II enrichment consists of group training in generic skills such as critical thinking, writing, and communication skills as well as metacognitive and self-regulation skills. These types of skills form the foundation for students to further their understanding of issues and to engage in collective production of new knowledge. In the programme, type II enrichment is provided by two types of units: skills development units and career support units. The skills units address the development of academic writing and the development of argumentation and debating skills. The career support units address the development of student awareness of suitable career goals, selection of activities to pursue these goals and to further develop metacognitive and self-regulation skills. These skills are most essential in the development of graduate attributes (De Grez, Valcke, & Roozen, 2014; Nicol, 2010). Type III enrichment comprises a project or investigation intended to solve complicated social or scientific problems that are of special interest to students and that allow students to apply their knowledge and their creative and critical thinking skills. Type III enrichment is provided by means of a summer school about a socio-scientific issue followed by a group project. High-ability students like to be independent and to face challenges in their learning tasks (Marra & Palmer, 2004). In addition, Scager, Akkerman, Pilot, and Wubbels (2014) discuss in their article about undergraduate honours students the importance of challenging high-ability students. In the honours track curriculum the final project brings challenge, independence and collaboration. These projects allow students to apply their knowledge to an issue of their interest and to learn to collaborate effectively with students from diverse disciplinary backgrounds. At the end of the honours programme students are required to develop presentations about the outcomes of these projects, in order to inform a broad public.

An essential aspect of the programme is that it should allow students to be stimulated into further studies and to exchange ideas. To foster the exchange of ideas outside course units, there are rooms where students can meet and cabins where they can confer with each other about assignments or project work.

Figure 1 presents a graphic representation of the honours programme at the University of Groningen. The programme involves a total workload of 45 European Credit Transfer System (ECTS), beyond the workload of the regular bachelor's programme (180 ECTS) in which a student has enrolled.

Figure 1. Scheme of the extra-curricular honours programme.

The teachers in the honours programme

Teachers from different disciplines, with a reputation for providing inspiring lectures and sparking critical discussions about social and scientific topics, were invited to deliver specific course units to the students in the honours track. These teachers possessed excellent teaching and research skills. Young, talented researchers also participated in this honours programme, as good exemplars for talented students. The lecturers were thus teaching in the honours track, as well as in the regular degree programmes.

Actual selection process

Annually, there are nearly 6000 first-year students at the University of Groningen. The honours programme aims to admit approximately 250 students each year in the first year of the honours track. At the end of the first semester, the top 10% of the first-year bachelor's students receive a call from the faculty administration to apply for the honours track. Students outside the top 10% may apply for a 'wild card' place in the programme as well. The offer of wild card placements was inspired by the concept of gifted motivation (Gottfried & Gottfried, 2004), which states that motivation contributes to achievement, independent of IQ, even though high ability is partly a prerequisite. To be considered for selection, students must complete an application form and write a motivation letter in which they clarify their reasons for applying. The guiding principle for the selection procedure overall is whether a student exhibits signs that he or she has ambitions to fulfil a leading role in research or society. There are quota for each faculty, based on the total number of students enrolled.

Students who are admitted to the honours track are obliged to keep their exam results in their mainstream programme at a high level. If they fail on too many examinations in their regular programme they have to leave the honours track.

Conceptual framework

We used Biggs' (2003) 3P model to guide our study of factors that contribute to students' academic performance and the perception of GAD in the multidisciplinary programme. Our focus is on the presage and product factors from Biggs's model. Presage factors regard student characteristics, students' perceptions of the learning environment, quality of collaboration in the final group, and the nature of the teaching in courses they attended. The product factors point at the perception of the quality of the group product, and ultimately the perceptions of the impact of the entire honours track on GAD. The honours track design requires active engagement, and without a deep approach to learning high engagement in the group project is impossible. We assume that students' perceptions of the learning environment and qualities of teaching interact in order to produce challenging learning activities, which in turn enhance students' academic performance and their acquisition of graduate attributes. In this context, we therefore evaluate: students' performance motivation (PM); their perceptions of the honours track as a LC; and the frequency with which students have attended course units in which teachers initiated and supported critical and creative thinking in relation to the learning outcomes. Teachers' support is a prerequisite for enhancing active learning activities and the frequency of the reported teacher behaviours indicates the intensity of that support, which can be seen as deepening aspects that contribute to GAD. In our view, the perception of the honours track as a LC and the perceived quality of teaching are complementary facilitating factors. If students view the honours track as an opportunity to make contacts with students and teachers this facilitates the formation of groups to pursue their mutual interests which, in turn, will facilitate further learning. This further learning can be enhanced by teacher support to engage in assignments that require critical and creative thinking in courses of their interest. Both factors should affect students' engagement in the final group project and development of graduate attributes.

Method

Instruments

Annually administered questionnaires served to assess students' motivation and their course experiences. The questionnaire for the second year contained multi-item scales to measure student PM and the perception of the honours track as a LC. Table 1 gives an overview of the instruments used with exemplar items.

The PM scale consisted of four items about grade ambitions. The assessment of the LC relied on the LC scale from the Course Experience Questionnaire (CEQ) (Ramsden, 1991). Jansen, van der Meer, and Fokkens-Bruinsma (2013) proved the CEQ to be valid in the Dutch situation.

The questionnaire for the third year contained multi-item scales that sought to evaluate teaching behaviours in the disciplinary and multidisciplinary course units during the second and third years and their group cooperation in the final project. This third-year questionnaire also contained questions about students' perceptions of achieved graduate attributes and about their experiences in the final group project.

The respondents assessed teachers' behaviours with an adapted version of the structured teacher observation scale (VanTassel-Baska, Quek, & Feng, 2007). That is, students rated the extent to which, during lectures, specific teaching behaviours occurred (less than 25%, 25–50%, 50–75%, more than 75%). To assess the quality of the

Table 1. Description of instruments used in the study.

Scale	Exemplar item	# Items	Coefficient α
PM	<ul style="list-style-type: none"> • If I prepare for an exam I always aim for a grade 8 or higher • My aim is to get higher grades than my fellow students 	4	0.70
Teaching critical and creative thinking (TCCT)	<ul style="list-style-type: none"> • The teachers engaged students in comparing and contrasting ideas (e.g., analyse generated ideas) • The teachers required students to gather evidence from multiple sources through research-based techniques (e.g., print, non-print, Internet, self-investigation via surveys, interviews) 	13	0.86
LC	<ul style="list-style-type: none"> • I felt part of a group of students and staff committed to learning • I was able to explore my academic interests with staff and students 	4	0.76
QC	<ul style="list-style-type: none"> • The strategy we developed to complete our project was effective • We cooperated extremely well 	7	0.77
GAD	<ul style="list-style-type: none"> • The programme has increased my ability to exchange thoughts with students and academics from other disciplines than my own • The programme has raised my awareness of social and ethical aspects of research and innovation 	7	0.85
Product quality (PQ)	<ul style="list-style-type: none"> • We managed to produce a fine and excellent piece of work 	1	—
AC mark			—

collaboration, we relied on the group process reflection survey questionnaire by Kanthan and Mills (2007). The students assessed the quality of the group product with a single item: 'We managed to produce a fine and excellent piece of work'. To assess the contribution of the programme to GAD students considered seven items. For all multi-item scales, we used four response alternatives (1–4), such that the scale mid-point corresponds to a value of 2.5. Scores above the scale mid-point imply a fair to strong presence of a particular characteristic, whereas a score of 1 indicates its complete or nearly complete absence. Course marks, on a scale from 1 to 10 (1 = total lack of knowledge/skills, 10 = excellent competence/performance), came from the administrative database. Finally, we averaged the marks that the students earned during the second and third years of study to denote their level of academic performance. In both questionnaires students had the opportunity to elaborate on their answers on the pre-structured questions at the end.

Population, data collection and response

In 2009, 215 students were admitted to the honours programme; 160 students (74%) remained enrolled through the third year. The main reasons that approximately one-

quarter of the students dropped out during the first two years included the workload (36%), changes in priorities (24%) and dissatisfaction with the programme content (19%).

At the end of each year, all students still enrolled in the honours track received an online questionnaire containing questions about their motivation, course experiences and satisfaction. A total of 102 students (64% of all third-year students) completed the second-year questionnaire, and 73 students (46%) completed the third-year questionnaire. Because the students were selected based on their high performance in the first semester, we do not expect differences between respondents and non-respondents regarding grades. Possible differences could be expected on gender and faculty. Female students generally show higher grades and better study progress than male students (Jansen, 2004; Shah & Burke, 1999) and are generally more conscientious and better time managers (Trueman & Hartley, 1996). Faculties differ in study programmes and time required for contact hours or hours for private study. Therefore, we analysed the non-response on gender and faculty. Despite a slight variation in the response rates between faculties, the differences in response percentages were not significant. Nor was the difference in response percentages between men (46%) and women (48%) significant.

Analyses

The central research question is aimed at clarification of the relationships between students' perceptions of the teaching and learning setting in the honours track and other conditions that pave the way for them to develop graduate attributes and a high level of academic performance. To gain understanding of the impact of factors that facilitate or undermine academic performance and the development of graduate attributes, we conducted correlation analyses. The outcome variables were the level of course marks and the perceived contribution of the honours track to students' graduate attributes. Then we used the correlation matrix, containing variables that correlated significantly with group project factors and learning outcome factors, to conduct a path analysis with the computer programme LISREL VIII (Jöreskog & Sörbom, 1996).

Results

Descriptive data

Table 2 contains statistical information on variables used in this study to assess the student and track characteristics and outcome indicators.

The mean score on the students' PM scale was 3.04, indicating that on average, students had a strong drive to keep performing well on their examinations. The distribution proved quite normal, with a standard deviation of 0.65, so there was also a group for which the drive to perform was not so strong.

Students indicated which supporting teacher behaviours they encountered in the broadening and deepening course units in the last two years of the honours track. A mean score of 3 indicates that students experienced the teaching behaviours in more than half of their lectures and tutorials. Table 3 shows the mean scores and standard deviations of different aspects of teaching behaviour.

Table 2. Descriptive statistics for student characteristics, track characteristics and outcome indicators.

	Mean	Standard deviation
PM	3.04	0.65
TCCT	2.90	0.49
LC	3.00	0.53
QC	2.88	0.48
PQ	2.92	0.80
AC mark	7.60	0.69
GAD	2.90	0.53

Student experiences in the final group project

Students used the outcomes of their research activities and inventions to assemble different kinds of products and presentations. For example, one group contacted a publisher and produced a book about the consequences of the financial crisis in different sectors of the economy, art and social life. Another group gathered the knowledge of local residents about nanotechnology to carry out a risk–benefit analysis for a group of products that rely on nanotechnology. With the results of their research, they directed a film for use in informing the public about nanotechnology and sparking discussions about its benefits and disadvantages for product manufacturing.

Most students expressed satisfaction with the quality of their group product. The mean item score was 2.92 (SD = 0.80). Students' mean item score on the group cooperation scale of 2.88 (SD = 0.48) indicated that on average, they were fairly satisfied about the level of cooperation within their group. However, analyses of variance suggested significant differences between the groups, in terms of both the perceived quality of cooperation and their satisfaction with the quality of the final product.

The responses of students who were less satisfied with the quality of cooperation and the product revealed that in certain groups, one or two students showed little commitment and did not engage fully from the start of the project.

Students' academic development in the honours track

Nearly two-third of the students (65%) had mean item scores above or equal to 2.75, which indicates that they perceived a strong contribution of engagement in the

Table 3. Perceived presence of characteristics of active teaching in honours course units, means and standard deviations.

Teaching characteristics	Mean	Standard deviation
Challenging demands	3.07	0.71
Differentiation	3.08	0.58
Problem-solving	2.78	0.62
Critical thinking	2.84	0.67
Creative thinking	2.93	0.59
Research activities	2.81	0.79

Note: 4 = in almost all lectures and tutorial sessions, 3 = in more than half of the sessions, 2 = in less than half of the sessions, 1 = in almost none of the sessions.

honours track to their skill development. Thirty per cent perceived only a moderate contribution as indicated by mean item scores between 2.25 and 2.75, while 5% perceived very little or absolutely no contribution to their skill development (mean item scores lower than 2.25). Table 4 shows the scores of perceived contribution of the honours track to seven graduate attributes. The highest score was given to the contribution to the development of research skills, followed by communication skills. The scores of contribution to all the skills is above the scale mid of 2.5, meaning that the programme has indeed contributed to the acquisition of those skills.

Conditions that relate to graduate attributes development

We used correlations to investigate the relationships between students' PM, students' perceptions of the learning environment and their perception of quality of teaching in the attended course units, students' average course (AC) marks, their experiences in the final group project and the perceived contribution of the track to students' GAD over the whole three-year period. Table 5 summarizes the correlations across these variables.

As Table 5 shows, PM has a strong and significant relationship with the average marks that students earn, as well as with the perceived contribution of the honours track to their graduate attributes development. Teaching creative and critical thinking, perception of the track as a LC, and the perceived quality of collaboration (QC) in the group project relate significantly with the group product satisfaction. The quality of teaching in the honours setting also relates significantly to the AC marks. All variables relate significantly to the perceived contribution of the honours track to students' GAD. Finally, and as expected, the QC is strongly correlated with satisfaction with the group product.

To explore how the different variables contribute to the outcome variables (perceived GAD and AC marks) a causal path model was developed and evaluated by means of the statistical program LISREL (Jöreskog & Sörbom, 1996). The causal path model was developed in two steps. The first model consisted of the specification of direct causal paths between the presage factors and students course marks, the quality of the group product and the perceived graduate development. In this initial model, we assumed that students' PM would affect the course marks as well as the perceived GAD. We expected students who perceive the honours track as a LC and who experienced a greater amount of creative and critical thinking to be more positive about their GAD. The perceived quality of the group product was expected to be affected by the

Table 4. Perceived contribution of the honours track to the development of different graduate attributes, means and standard deviations.

Graduate attributes	Mean	Standard deviation
Research skills	3.23	0.81
Communication skills	3.15	0.70
Knowledge application	2.93	0.75
Collaboration skills	2.80	0.63
Ethical judgement	2.73	0.92
Presentation skills	2.71	0.84
Experimentation skills	2.67	0.80

Table 5. Correlations between student, teaching and outcome variables.

	PM	TCCT	LC	QC	AC	PQ	GAD
PM	1.00						
TCCT	0.20	1.00					
LC	0.23	0.32**	1.00				
QC	0.23	0.35**	0.38**	1.00			
AC marks	0.55**	0.26*	0.02	-0.01	1.00		
PQ	0.20	0.44**	0.27*	0.65**	-0.03	1.00	
GAD	0.42**	0.61**	0.54*	0.32*	0.30*	0.26*	1.00

* $p < .05$.** $p < .01$ (two-tailed).

quality of the collaboration in the project. Since the group project was designed to be an excellent opportunity to apply students' knowledge and skills we also evaluated in two subsequent models a causal path between either the QC or the quality of the group product with the development of students' graduate attributes. Both models were then evaluated using LISREL. This evaluation revealed that there was no evidence for an effect of either the QC or the quality of the group product on the degree of perceived development of students' graduate attributes. These paths were, therefore, omitted. Figure 2 shows the final estimated model (only significant paths are displayed). The direction of all paths is indicated in Figure 2 by arrows. The figures in the model are standardized partial correlations (or beta-coefficients).

The resulting path model fits the covariance matrix reasonably well ($\chi^2 = 12.31$, 10 degrees of freedom; $p = .27$; RSMEA = 0.06; SRMR = 0.05; GFI = 0.95; CFI = 0.98). The lowest and highest standardized residuals are -1.06 and 1.49. This result indicates

Figure 2. Path model for the impact of honours track participation on students' academic performance and perceived GAD.

that there is no suspicion of non-linearity, non-normality or specification error in the model (Jöreskog & Sörbom, 1996).

The model explains 48% of the variance in students' satisfaction with the quality of the group product and 57% in their GAD. The model also explains 30% of the variance in students' course marks. Thus, we can conclude that the degree of GAD greatly depends on students' performance ambitions, the extent to which teachers support creative and critical thinking during their lectures and the extent to which the students view the honours track as a LC. Their satisfaction with the final group project depends mostly on the support that students receive from teachers and the efficiency of the collaboration for realizing the final product.

Although students' satisfaction with collaboration in the group project correlates positively with the perceived contribution of the honours track to students' graduate attributes, the path analysis provides no statistical evidence that satisfaction with the collaboration actually mediates the development of graduate attributes. The perceived GAD instead seems to result from participation in the modules and teachers' support.

Conclusions and discussion

The ETM has seldomly been applied to research university settings. Success stories listed on the Renzulli learning-website² are predominantly based in elementary or middle school projects. This study provides evidence that a multidisciplinary honours track based on Renzulli's ETM offers high-ability research university students a rich learning environment. Our evaluation reveals that students' perceived development of graduate attributes largely depends on the extent to which teachers challenge and support their critical and creative thinking, as well as on students' inclination to view the honours track as an opportunity to engage in a LC. Students who view the honours track as a LC benefit more from the honours track than students who do not view it this way. In essence, then, the same factors that contribute to the development of graduate attributes in mainstream degree programmes (see Smith & Bath, 2006) also apply to a multidisciplinary honours track. However, in a bachelor's honours track that is additional to a regular degree programme, the establishment of interactive and CL experiences that contribute to high levels of graduate qualities requires most careful planning and guidance.

Reflecting on the findings from this study, we note consequences for the selection of students, monitoring the quality of teaching and the supervision in group projects. Assessments of students' performance ambitions and their commitment to collaboration is of crucial importance. Students have to realize that the honours track is demanding and that they will face a high workload. Although the selected teachers in this study were all highly qualified and motivated, the relation between teaching support qualities and the extent of graduate development suggests that there is room for improvement in the development of graduate attributes. Regular assessment of students' experiences and the use of lesson observations seem essential in order to be able to further improve graduate development. Last but not least, the group work project demands careful preparation and supervision, to ensure learning opportunities for all students. Depending on their background, some students may need more introduction to concepts and clarification of their meaning than other students. Especially in group work, the teacher needs to be sensitive to this variation to ensure and enhance individual participation. The use of a syllabus for specific concepts may be a useful instrument to

ensure that all students can start the course properly prepared, such that they will be in a good position to engage fully in designing the planned collaboration.

Another improvement relates to rewards for students' input and effort. The results reveal that not all honours students share the same level of intrinsic learning motivation, so it is important for teachers to actively seek to prevent too much time-wasting by using a differentiated grading procedure. Teacher assessment, in conjunction with peer assessment, could be a useful way to evaluate the group process as well as the group product.

Wider concerns and implications for practice

Although the honours track seems to offer a successful add-on to regular bachelor's programmes to stimulate the GAD of high-ability students, there are concerns, especially related to the teaching practice. Teachers represent a critical factor. Gentry, Steenbergen-Hu, and Choi (2011) propose some student-identified characteristics of exemplary teachers: passion, high expectations, sense of humour, connected with students, engaging with students in meaningful learning and a willingness to differentiate between individual students. Although the teachers in the programme appeared to possess these characteristics, not all students experienced all lessons as challenging and activating, whereas active learning tasks seems to be a prerequisite for enhancing engagement and higher order learning (Biggs, 2012). Therefore, it seems essential to conduct further research into the skills that teachers require in a multidisciplinary setting to captivate all students and to develop tailor-made professionalization tracks for teachers eligible for teaching at honours level.

Limitations

The results presented in this paper should be interpreted as preliminary for a number of reasons. Firstly, the programme has just started and is still in development. Secondly, the study participants were the first cohort of students in the University of Groningen Honours College. Thirdly, the data are based on self-reports. Although students can be regarded as credible reporters of their activities and judges of their academic progress (Kuh, 2004, pp. 3–4), to improve teaching practices self-reports should be combined with observations of lectures and analysis of the assessment of student work in course units to identify weaknesses in teaching. In this first cohort, the group of respondents is rather small. However, the research project points to some important issues that are relevant for designers of this type of programme for talented students.

Notes

1. The Dublin descriptors are a set of fairly general abilities and skills that students should possess after they complete higher education bachelor's and master's degree programmes in any European country. These descriptors have been instrumental in the process of creating one European higher education area.
2. See <http://www.renzullilearning.com/success-stories.aspx>

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