Student Level Factors Influencing Performance and Study Progress

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ABSTRACT

A large proportion of Norwegian youths are students in higher education. This is in line with Norwegian education policy. However, progress and performance are a problem. This is costly both for the individual and for the institutions. This paper examines which student-related factors seem to have a bearing on performance and progress. The analytical model includes sex, age, ability, parenthood, housing expenditures, social background and motivation. Aditional factors which are included are how many hours the students spend on their studies as well as how much and when the students have paid work. The paper also examines whether the study programme may influence performance and progress. Data was gathered in a quantitative study. 565 students in a Norwegian University College completed structured questionnaires. Five explanatory factors were found to have a bearing on performance and progress: ability, motivation, time spent on studies, time spent on paid work and social background. Some of these factors are interdependent. There are few detrimental consequences for academic performance when the students work a moderate number of hours, less than 15 hours weekly.practices with data drawn from classroom observations and scoring rubrics.

Keywords: *Student performance, study progress, paid work*

INTRODUCTION

A large proportion of Norwegian youths are students in higher education. This is in line with Norwegian education policy, which states that Norwegians should have equal access to higher education (Kunnskapsdepartementet, 2012). However, progress and performance are a problem and between 11 and 21% drop out during the first year, at some institutions 40% have dropped out before they complete the bachelor programme (Aamodt & Hovdhaugen, 2011). This is costly both for the individual and for the institutions. Because the financial system for higher educational institutions is based on the number of students passing exams this is a financial challenge for the institutions and there is an on-going discussion to find remedies to rectify this problem.

However, there are many factors which have an impact on study performance and progress. Some factors are at student level, some at institutional or programme level and others at structural level (Van den Berg & Hofman, 2005). In a comprehensive study in the Netherlands they find that variance in study progress and performance is largely determined by student factors. Such factors might be study techniques, ability, age, sex, motivation, time spent on paid work and time spent on studies. Some studies show that female students perform better than male (Chee, Pino, & Smith, 2005; Erten, 2009). The female advantage may be explained structurally (Alon & Gelbgiser, 2011). In Norway a higher proportion of male students do not complete higher education compared to female (Statistics Norway, 2012a). Even as early as at secondary school level female pupils perform better than their male counterparts (Bakken & Elstad, 2012).

With regards to motivational aspects studies show that student teachers regard intrinsic rewards as important

(Ezer, Gilat, & Sagee, 2010). There are also reasons to believe that intrinsic motives are of importance to becoming a teacher (Bruinsma & Jansen, 2010; Roness & Smith, 2009), and hence could probably have a bearing on the likelihood of for instance completing education. Goodman et al. (2011) find that there is a direct relationship between motivation and performance. They find an indirect relationship when effort is taken into account. Manthei and Gilmore (2005) find that family matters, illness, relationship problems, parenting and living costs influence the study situation. In a comprehensive Norwegian study it was found that students with low results from upper secondary school more often dropped out of higher education and to some extent this was also the case regarding students from low social backgrounds (Mastekaasa & Hansen, 2005). This can be seen in relation to a growing difference in academic achievement in Norwegian secondary schools related to social background (Bakken & Elstad, 2012). Lassibille and Gomez (2009) find that pre-enrolment academic ability, secondary school background, age and family background influence study progress.

During recent decades study time among full-time college students has declined (McCormick, 2011). Empirical research on the relationship between study time and performance is inconclusive (Nonis & Hudson, 2010). Some even find that study time is negatively correlated with academic performance, while others find that it is positively correlated with academic performance (Khron & O'Connor, 2005). A study of 2nd year business students found no effect of time spent studying on performance (Darwin, 2011). The lack of consistency in the findings might be because there are intervening factors between time spent on study and performance.

In a study which tries to isolate most of these factors, Nonis and Hudson (2010) conclude that time spent on paid work influences academic performance. As time at work increased academic performance decreased. During the last ten years we have seen an increase in part-time work by full-time students (Beerkens, Mägi, & Lill, 2011). A study reports that up to 90% of full-time students have paid work part-time during term time (Hlavac, Peterson, & Piscioneri, 2011). Reasons for working were mainly financial (Cox, 2009). The introduction of university fees in Australia appears to partially account for current levels of employment among students. These findings are consistent with findings from UK; employment amongst students has increased (Metcalf, 2003; Moreau & Leathwood, 2006). In a UK study Curtis (2007) finds that 59% of the students were employed during term-time. In another study Holmes (2008) finds that 83% of the students work during term and 58% do so to cover basic living costs. Some also worked so that they could have extra money for clothes and a social life. The majority of the students in her study from England worked 13-14 hours. This is the same as found in a New Zealand study (Manthei & Gilmore, 2005).

The negative side-effect of working is less time to study, which may imply reduced study progress or dropout (Vossensteyn, 2009) and affect academic performance negatively (Humphrey, 2006). Many researchers found that students working more than 10 hours a week reported that their work adversely affected their academic performance. Work hindered the ability to devote enough time to study, affected the performance in courses and caused them to take a longer time to complete the degree (Moreau & Leathwood, 2006; Holmes, 2008). Other studies report that those working more than 14 hours a week must face the consequences of lower academic performance (Hunt, Lincoln, & Walker, 2004; Manthei & Gilmore, 2005). Van den Berg and Hofman (2005) find that study progress is significantly reduced if students spend more than 12 hours a week in paid work during term. There seems to be few detrimental consequences on academic performance when the students work a moderate number of hours, for instance less than 6 hours a week does not have any negative effect in an Australian study (Hlavac, Peterson, & Piscioneri, 2011). In Estionia working less than 25 hours does not seem to influence study performance and progress (Beerkens, Mägi, & Lill, 2011), while a study from Canberra shows no negative effect on performance when the students work below 22 hours per week (Applegate & Daly, 2006).

Moreau and Leathwood (2006) argue that the tendency for English students to work more hours during term-time is a consequence of reduced financial support. They also find that working-class students are more likely to work during term-time than students from better-off homes. Thus this might exacerbate existing inequalities in English society. In Estonia, however, students from more affluent families are as likely to have paid work as students from poorer families (Beerkens, Mägi, & Lill, 2011).

As we see from this literature review there are many factors that might influence student performance and progress and the local context seems to have a bearing on the findings. In the present study we will see which student level factors influence performance and progress at a Norwegian University College.

Structural Context for Norwegian Students

Norwegian students can get a loan and grant from the State Educational Loan Fund but the amount is not sufficient to cover all the necessary living costs. In the academic year 2010/2011, the total amount (grants and loan) from the Loan Fund to a single person living away from home in higher education was 89 000 kroner. (Otnes, Thorsen, & Vaage, 2011). The value of loan and grant, corrected for inflation, has gone down by 1% in the period 2005-2010 (Barstad, Løwe, & Thorsen, 2012). Thus the financial situation for students has not improved and 60% of students work alongside their studies (op.cit.). On average, students work 8 hours per week in paid job. The most common reason for having paid work alongside study is that the support from the State Educational Loan Fund is insufficient. Two of three students cite this as the reason and 63% say they need more money to cover necessary expenses for food and housing. Furthermore, 35% respond that they need money to cover their social life (Otnes, Thorsen, & Vaage, 2011).

RESEARCH QUESTIONS

As seen in the literature review several factors might influence students' performance and progress. In the present study the analytical model includes sex, age, ability, parenthood, housing expenditures, social background and motivation as background variables. In addition we include how many hours the students spend on their studies as well as how much and when the students have paid work. We will also analyse whether the study programme, a factor at institutional level, may influence performance and progress. Many of these variables are interrelated. For instance ability may influence how much time a student will need to study in order to perform well.

Another example is cost of living which might influence the student's need to have paid work and then lead to fewer hours spent on study work. This might lead to weaker performance and progress, depending on the student's capability for studies. Low performance might also influence motivation negatively and thus lead the students into a negative circle. Not performing well leads to low motivation. On the other hand motivation might compensate for poorer ability and encourage the student to study harder and thus lead to good performance and progress. Figure 1 shows student level factors which will be analysed in relation to performance.

METHODOLOGY

Data was gathered in a quantitative study using structured questionnaires. A pilot study (N=112) was carried out during May 2011 in order to ensure validity and reliability. The pilot study led to a major revision of the questionnaire. The current questionnaire was administered between February and April 2012. Questionnaires were administered during compulsory lecture time. All students present on that occasion completed the questionnaires, which were collected immediately. Either one of the researchers or the lecturer in charge administered the data collection.

The questionnaire includes background variables (sex, age, living situation, parents' education, stream and grades from upper secondary school), reason for study choice, notes, evaluation of study programme, study progress, time used on study, time used on paid work and other activities, motivation for study and questions on finances.

The respondents are full-time campus students at Hedmark University College, Faculty of Education and Natural Sciences. They attend General Teacher Education Programme (233 students), Kindergarten Teacher Education Programme (168 students), Music Teacher Education Programme (47 students) or BA programme in Games, Arts and Simulation (117 students). In total 565 students completed the questionnaire; of these 79% are student teachers.

The students range from first year students to third year undergraduates. The response rate was 75. Compared to other studies the response rate is high, which strengthens the significance of the findings. However, given the objective of the study we must discuss the consequences of the missing students. If those who were not present when the questionnaires were administered are students often not attending lectures or/and are less motivated students, this might influence the findings. However, we are not able to tell if the non-attendance is systematic.

Some questions in the questionnaire are about time allocation. Respondents are in different ways asked to report how many hours they use on studying and on paid work. It is not clear to what extent time allocation reported retrospectively reflects actual behaviour (Sonnenberg et al., 2012). However it seems that data quality is better when respondents are reporting long-lasting and externally structured activities, such as paid work, compared to less structured, short-term and infrequent activities (op.cit). Diary-based data collection is also used to improve data

quality (Kitterød, 2003). To minimise poor respondent recall in surveys it is generally recommended to use questions that clearly frame a specific time period (Miller, 2012). In our questionnaire we have used expressions like "in a typical week" and "the last week before the exam".

For analytical purposes we have created two indexes, one for performance and progress (abbreviated to performance index), and one for motivation. The performance index is composed of the following variables: the academic results in their latest exam, whether they had ever failed an exam, and if they had had a normal study progression. On the basis of the index the students are divided into three groups; low, medium and good performance; 33% of the students have good performance while 17% are low-performing.

Motivation is an important factor in all studies discussing study performance. However, it is difficult to find valid indicators of motivation. In order to raise validity we have several indicators/questions that seek to reveal the students' motivation. These are: how sure the student is about study choice, whether it is regarded as important to complete studies on time, how motivated the student is to work with the study, how important is achieving good marks and how motivated the student is with regard to future occupation. We have developed a motivation index based on these variables. Each variable has the same weight. On the basis of the index the students are divided into three groups; low, medium and high degree of motivation. 29% of the students have a high degree of motivation, 13% have a low degree of motivation. When further discussing performance and progress we relate to these indexes.

Student Level Factors Influencing Performance and Progress

In this section we will discuss which student level factors influence performance, and we will use the performance index in the discussion.

In general there is no difference in performance according to sex. One of three students gets top score on the index, regardless of sex. However, there are differences according to study programme. Female teacher trainees perform better than male, while male students in Games, Arts and Simulation get better results than female. Age is another factor that may influence performance, but the differences are small and contradictory. Among students under 25 years 34% have good performance; in the eldest group 29% fall in this category. However, we also see a tendency that older students are more seldom low performing than younger students. The conclusion is that we do not find that age has any bearing on performance.

Ability is difficult to define. In the present study we have looked at results from upper secondary school and the study programme at upper secondary school. In principle there are two streams in Norwegian upper secondary schools, an academic stream and a vocational stream. The academic stream qualifies for higher academic studies. In Norway even students from vocational streams can be admitted to university studies. They must take one extra year in order to catch up on the most important academic subjects. We find that there is a correlation between results from upper secondary school and performance (Table 1). Students with better results from upper secondary school perform better than those with lower results, 37% and 20% have good performance respectively. However, the findings are weakened by the fact that only 316 out of 565 students have answered this question. We find some interesting differences according to study programmes. It is on the Kindergarten Teacher Education Programme that intake points seem to influence performance mostly. 29% of those with low intake points perform low compared to 9% of those with higher intake points.

Table 1. Study scores from upper secondary school and performance. Percentages (N)

	Low performance	Medium performance	Good performance	Total
<40	27	54	20	101 (56)
40+	15	48	37	100 (260)

We find no difference in performance according to study programme at upper secondary school.

Parenthood could be expected to influence performance. 51 students in our material live together with children. Children imply more tasks and responsibilities in family life, but it could also strengthen the ability and need to plan your time and thus have a positive effect on performance. In general parenthood does not seem to influence performance significantly. It is mainly students on the Kindergarten and General Teacher Education Programmes who have children of their own. Among general teacher education students we find that living with children is associated with better performance.

Housing expenditures will take more than 50% of the loan and grant given to a student per year, so this will be

the largest expenditure. Sharing accommodation will possibly lower the costs. Students in our sample live in a variety of types of households. Some share the rent with someone; others have to pay it all alone. It is likely that students with heavy financial burdens will work more hours paid work, and then have less time for studies and hence perform lower. In our study we find no support for this. Whether the student shares housing expenditures does not seem to affect study performance.

Social background is a factor influencing performance. However in this study social background, measured as whether the parents have higher education, seems to be of little importance regarding the students' performance. Nevertheless, students coming from a family background where both parents have higher education are more often good performing (42%) than students coming from homes with a weaker academic bakground (31%). In the Norwegian context secondary school results are clearly positively correlated with social background measured as parents' educational niveau (Statistics Norway 2012b). Thus our findings might be intercorrelated with students' ability.

We find a strong correlation between the indexes for motivation and performance. The better motivated the students are, the better they perform (Table 2). This is not surprising. Thus motivation for studies seems to be a crucial factor for good performance.

Table 2. Motivation and performance. Percentages (N)

	Low performance	Medium performance	Good performance	Total
Low motivation	33	46	21	100 (63)
Medium motivation	17	51	32	100 (284)
High motivation	11	45	44	100 (149)

Time spent on studies is a factor we would expect to have a bearing on performance. On average the students use 26,4 hours per week studying, though there is wide variation. Most students spend fewer hours than a full-time study should demand. The students who spend most hours on their studies perform highest (Table 3). The students who put in fewest hours are also the lowest performing students. However there are also students that put in many hours and are still not well performing. Students who spend many hours on self-study/home-work perform slightly better than those who put in fewer hours. How often the students are present at campus also seems to have a bearing on performance. Students who are present more seldom than weekly perform clearly lower than students who are present one or more days every week. So our data confirm that students who study hard and attend classes perform better.

Table 3. Total time spent on study work during a week and performance. Percentages (N)

	Low performance	Medium performance	Good performance	Total
1-17 hours study	27	46	27	100 (128)
18-29 hours study	15	55	30	100 (258)
30+ hours study	15	41	45	101 (123)

Paid work during term is expected to influence performance negatively. 57% of the students have paid work during term. On average they spend 12,8 hours a week on paid work, but there is wide variation. 29% have never had paid work during term time. Whether paid work influences study performance negatively depends on the number of working hours. Those who work more than 14 hours a week perform slightly lower than the students who do not have paid work or work less (Table 4). Thus how many hours the students are in paid work has a bearing on performance; not whether the student have paid work or not.

Table 4. Hours in paid work during a week and performance. Percentages (N)

	Low performance	Medium performance	Good performance	Total
Not paid work	14	50	36	100 (217)
1-14 hours	15	52	33	100 (193)
15+ hours	28	44	27	99 (113)

Study Programme

The study programme might be a factor that influences performance. Some study programmes are more demanding than others and students must put in more hours in order to progress. Van den Berg and Hofman (2005) in their comprehensive study of factors influencing performance conclude however that study programme has little explanatory value on students' performance and progress. In our study performance varies according to study programme. Students who attend the Games, Arts and Simulation programme perform better than the other students (Table 5). Students in Games, Arts and Simulation are more often male students, have intake points as average, are at the same age but have more seldom a family of their own. The motivation is equal to the other groups. They have more often at least one parent with higher education. However, the main difference is the number of hours they put into their studies. Students in Games, Arts and Simulation are mostly full-time students; only 25% have paid work during term. They also work long hours on their studies. They are also among the students that are most happy with the social life at campus. 74% say that this is good compared to the average figure of 63%.

Table 5. Study programme and performance. Percentages (N)

	Low performance	Medium performance	Good performance	Total
GTE'	20	49	32	101 (228)
KTE'	22	56	22	100 (163)
MTE'	0	61	39	100 (23)
GAS'	9	39	51	99 (109)

*GTE: General Teacher Education Programme, KTE: Kindergarten Teacher Education Programme. MTE: Music Teacher Education Programme, GAS: BA programme in Games, Arts and Simulation

CONCLUSION AND DISCUSSION

In the article several factors have been studied to investigate whether they have a bearing on students' performance. We have mainly examined student level factors. There is a complex interrelationship between some of these factors. For instance there is theoretical and empirical evidence that performance is a function of ability and motivation according to Nonis and Hudson (2010). A student with high ability but little motivation will not perform well. Ability tests also reflect motivational differences (Chan et al., 1998). Thus the variation in motivation will influence the correlation between ability and performance.

In the present study we have five explanatory factors that have a bearing on performance and progress: ability, motivation and time spent on studies, time spent on paid work and social background (Fig 2). However, social background has only a weak influence and needs to be studied in a larger study. Some of these factors are interdependent. As mentioned earlier, in Norway we find a strong relationship between social background and ability measured as grades from upper secondary school. And we know that motivation might be negatively influenced if a student gets negative feedback in the form of low grades and slow progress.

Our findings partly support findings in other studies. Like Goodman et al. (2011) we find that motivation influences performance. In line with Lassibille and Gomez (2009) and Mastekaasa and Hansen (2005) ability is found to be a factor that influences performance, but in contrary to Manthei and Gilmore (2005) we find no support for the theory that parenting and family matters have a bearing on performance. In our study it is a clear finding that students who work hard with their studies perform better. 27% among the students devoting least time for studying are good performing, compared to 45% among the students devoting most time to study. As stated above research in general is inconclusive on this point.

We find that 57% of the students have paid work during term time. This is close to findings in other studies (Curtis, 2007; Hlavac, Peterson, & Piscioneri, 2011). The students on average worked between 12 and 13 hours a week, which is about the same result as in many other studies (Manthei & Gilmore, 2005; Holmes, 2008). We also conclude that there are few detrimental consequences for academic performance when the students work a moderate number of hours, less than 15 hours. But given the financial situation for the students most of them find that they must have paid work in order to support themselves. This is also in agreement with what other researchers conclude.

Our findings are limited to General Teacher Education Programme, Kindergarten Teacher Education Programme, Music Teacher Education Programme and BA programme in Games, Arts and Simulation. We do not know if there are specific aspects about these programmes which lead to our findings.

Another aspect is whether the institution can do anything to ease the situation for the students. One might discuss if the scheduling of lectures, online support etc might make it easier for students who combine study and paid work. We put this to the students without getting a clear picture. There seem to be different challenges depending on the study programme. Four of 10 students in Games, Arts and Simulation say that they would have preferred more compulsory lectures, and the same tendency is found among teacher trainees. The kindergarten teacher students would like fewer compulsory lectures while the students in Music Teacher Education are divided on this issue. These findings of course may reflect different regimes in different programmes today. All student groups would like there to be more net-based tutoring and that more of the teaching was offered in smaller groups.

Ability is another factor of importance for performance. If the institutions are able to increase the intake level requirements it is possible that more students would perform well. This has recently been done for the General Teacher Education Programme nationally but it is too early to see the results. The Games, Arts and Simulation programme is a very popular study with hard admission requirements, and we see that these students work very hard and perform well. However, hard admission requirements might not be a realistic option for all institutions and all study programmes.

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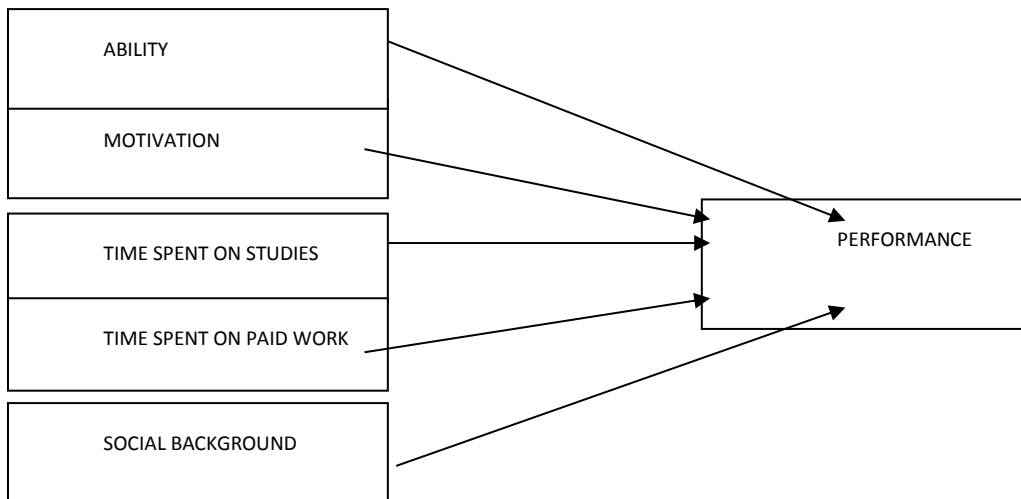
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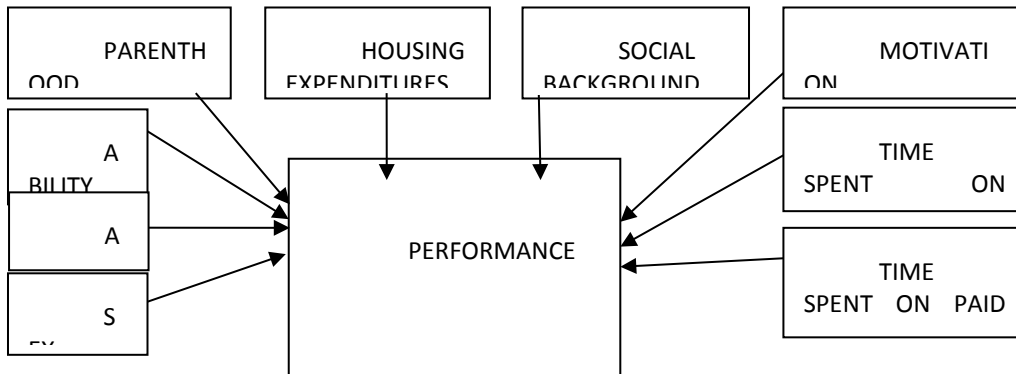
Figur 1. Analytical model. Student level factors

Figure 2. Student factors influencing performance