

ESTONIAN ENTREPRENEURSHIP UNIVERSITY OF APPLIED SCIENCES

Creativity and Business Innovation

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**THE EFFECTS OF INTRINSIC AND EXTRINSIC MOTIVATION ON
STUDENT LEARNING EFFECTIVENESS (CASE STUDY:
INTERNATIONAL STUDENTS OF ESTONIAN
ENTREPRENEURSHIP UNIVERSITY OF APPLIED SCIENCES)**

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RESUME

In education, motivation can significantly impact students' performance and outcomes. As a result, stakeholders who want to assist students in improving their academic performance should be aware of the elements that influence student motivation. Motivation comes in the form of intrinsic and extrinsic energies that drive humans to act with an inner drive to do something that causes them to persevere.

The research investigates the effect of intrinsic and extrinsic motivations on students' learning effectiveness while considering gender as a moderating factor, using international students of EUAS as the case study. The author used the quantitative research method for this research with an electronic survey that yielded a total of 212 respondents. The data was gathered and analyzed using Excel and SPSS. Reliability and validity tests, descriptive statistics, Pearson's correlation, regression, and independent sample T-test were used to analyze the data.

The study found that both intrinsic and extrinsic motivations positively affect student learning effectiveness. However, intrinsic motivations have more potent effects on students' learning effectiveness than extrinsic motivations. The study also found no significant difference in the mean of learning effectiveness for males and females. This indicates that at equal motivation levels, learning effectiveness for male and female students is the same. Therefore, both male and female students are expected to learn equally if motivated in the same way.

RESÜMEE

SISEMISE JA VÄLIMISE MOTIVATSIOONI MÕJU ÕPILASTE ÕPPIMISEEKTIIVSUSELE (EESTI ETTEVÕTLUSKÕRGKOOI MAINOR ÜLIÕPILASTE NÄITEL)

Hariduses võib motivatsioon oluliselt mõjutada õpilaste sooritust ja tulemusi. Sellest tulenevalt peavad sidusrühmad, kes soovivad aidata õpilasi nende õppeedukuse parandamisel, olema teadlikud elementidest, mis mõjutavad õpilaste motivatsiooni. Motivatsioon avaldub sisemiste ja väliste tegurite kujul, mis sunnivad inimesi tegutsema, sh sisemise sooviga teha midagi, mis on jääv

Antud lõputöös uuritakse sisemiste ja väliste motivatsioonide mõju õpilaste õppimise efektiivsusele, võttes sealhulgas arvesse ka sugu. Antud uuring viidi läbi EUAS välisüliõpilaste seas ning lõputöö autor kasutas kvantitatiivsed uurimismeetodid. Andmeid koguti elektroonilise küsitluse abil, millele vastas 212 vastajat. Andmed koguti ja analüüsiti Exceli ja SPSS tarkvara abil. Andmete analüüsimiseks kasutati kirjeldavat statistikat, Pearsoni korrelatsiooni, regressiooni kui ka T-testi.

Uuringutulemustest selgus, et nii sisemised kui ka välised motivatsioonid mõjutavad positiivselt õpilaste õppimise efektiivsust. Siiski on sisemistel motivatsiooniteguritel õpilaste õppimistõhususele suurem mõju kui välistel motivatsiooniteguritel. Uuringus ei leitud ka olulist erinevust meeste ja naiste õppimise efektiivsuses. See näitab, et võrdsel motivatsioonitasemel on mees- ja naisüliõpilaste õppimise efektiivsus sama. Seetõttu eeldatakse, et nii mees- kui naisüliõpilased õpivad võrdselt, kui neil on sama motivatsioon.

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INTRODUCTION

Motivation comes in the form of intrinsic and extrinsic energies that drive humans to act with an inner drive to do something that causes them to persevere (Badubi, 2017). Gribanova (2020) defines motivation as the provision of an incentive to stimulate an action. And the process of motivating an individual to complete a task. Intrinsic motivation is an individual's activity that stems from the person's desire, wish, personal interest, and performance. Extrinsic motivation enables a person to work in exchange for rewards or avoid punishment. (Begum & Hamzah, 2017) Intrinsic motivation is thought to have a more significant impact on individuals than extrinsic motivation. Intrinsic motivation refers to people who do things for the sake of doing them without expecting to be rewarded for it. (Wong, 2014) Extrinsic motivation is also required to increase interest in an activity to develop interest and is provided by tangible rewards and other incentives (Badubi, 2017). Teachers must teach in a focused and disciplined school setting (Olowoselu, Nyako, Bello and Joda, 2016). According to other research, both types of motivation are effective (Loganathan & Zafar, 2020). Extrinsic rewards have a negative impact on intrinsic motivation. On the other hand, students lose interest if they know they will receive external compensation from the start. Student engagement is heavily influenced by the ability to choose. (Begum & Hamzah, 2017) According to Loganathan & Zafar (2020), students who had to pick their favourite activity during the free-choice time had become less interested because it became a requirement. The students who did not limit which workout to do during free choice showed a higher interest in the activity at hand. This demonstrated that for students to spark interest from within, they must choose and get input on how they go about the learning process. (Loganathan & Zafar, 2020) Sparking intrinsic over extrinsic motivation in students is crucial to keep their interest in learning throughout the years (Begum & Hamzah, 2017).

According to Zaccone & Pedrini (2019), understanding how effective students are at learning is an essential subject with significant practical and scientific ramifications. El Massah and Fadly (2017) and Kang *et al.* (2018) both suggested that researchers have attempted to identify the factors that influence actual learning processes in educational programs. Scoring to Roy and Parsad (2018), earlier research also identified network ties among students' social factors that impact learning effectiveness. Zaccone & Pedrini (2019) explained an individual according to self-determination theory. They argued that an individual's happiness stems from satisfying their demand for competence, which is defined as believing that one person

can act competently in their surroundings to complete tasks. Intrinsically motivated people are those who are successful in addressing these demands.

According to Roy and Parsad (2018), student's study more when they are engaged in a lesson, as motivation helps them achieve success. Both accounts of extrinsic and intrinsic motivation have made an impact on students. Based upon a couple of research, both types of motivation work. (Zaccone & Pedrini, 2019) Some scholars argue that extrinsic motivation makes quick progress on students, while intrinsic motivation builds learning in the long-term aspect (El Massah & Fadly, 2017). According to Kang *et al.* (2018), some teachers find it easier to reward students for getting them to accomplish a task. At the same time, other teachers believe giving students a choice and allowing them to input their learning will spark motivation from within without any extrinsic reward. The different opinion has been a debate for many articles and has left the author of this research wondering which of these factors motivate the student learning process the most and has therefore mandated this research.

The overall aim of this research is to investigate the effect of intrinsic and extrinsic motivations on students' learning effectiveness while taking gender into account as a moderating factor. The research also intends to determine whether learning effectiveness is more robust for one of the genders at equal intrinsic and extrinsic motivation levels. To effectively navigate through the research, three research questions were formed.

- RQ1. What effects does intrinsic motivation have on the learning effectiveness of students?
- RQ2. What effects does extrinsic motivation have on the learning effectiveness of students?
- RQ3. Does gender moderate the effect of intrinsic and extrinsic motivation on the learning effectiveness of students?

This study adds to the existing literature in two ways: this research will be the first to incorporate the moderating role of gender into the relationship between students' motivation and learning effectiveness among students in Estonia, and second, it proposes the analysis of a rather large data set that will be gathered through a survey. As a result, solid empirical research based on a consistent data set is provided. The study adopts a quantitative research method with the use of a survey distributed amongst the international students at the Estonian Entrepreneur University of Applied sciences. Descriptive analysis, Pearson's correlation,

regression, and cross-tabulation analytical methods was be used in analyzing the data collected through the survey.

1. LITERATURE REVIEW

1.1. The Concept of Motivation

The act of pushing someone to achieve a desired course of action or pushing the right button to achieve the desired reaction is known as motivation (Badubi, 2017). It is defined as a method of stimulating, inspiring, and energizing individuals to work voluntarily, with enthusiasm, initiative, confidence, satisfaction, and a coordinated approach to achieve desired outcomes. (Steinmayr *et al.*, 2019) According to Siyuan *et al.* (2020), motivation is powering people to achieve high-performance levels and overcome barriers to change. Psychologists have provided different definitions according to attitude to the motivation phenomenon, which is briefly mentioned below (Siyuan *et al.*, 2020).

The word motivation was inspired by the Latin term "Move," which signifies "moving" and is an English word for the first time. Motivation is a factor that causes individuals to behave in a certain way. From the perspective of management, motivating employees is to have them behave in a way that benefits the company the most. (Legault, 2016) Although motivation researchers look at how conduct strengthens and leads to specific goals, the study of motivation is more of an investigation of the "Event condition" that gives power and direction to behaviour (Steinmayr *et al.*, 2019). Motivation is the force that causes movement in humans. Any agent that causes (internal or external) activity in a living creature is considered a kind of motivation. (Singh, 2016) What is inevitable and must be acceptable to the marked individual differences is that people have different motives, so before acting on the motivation, they need to be known the personal characteristics in their driving forces which can be more easily identified. Generally, motivation is the driver of guidance, control, and persistence in human behaviour. (Gribanova, 2020) In other words, what strengthens a person's behaviour? What guides such behaviours or conducts them in a particular direction? What enhanced or maintained the demeanour? It is called motivation (Steinmayr *et al.*, 2019). According to Siyuan *et al.* (2020), the perennial questions in human-forced within the study of motivation are: Why does one begin a treatment, continue it and end it? And which forces determine the severity of behaviour over time?

1.1.1. Factors affecting student's motivation

In education, motivation can significantly impact students' performance and outcomes. As a result, stakeholders who want to assist students in improving their academic performance should be aware of the elements that influence student motivation. (Silva, 2020) One of the most critical factors determining student motivation, according to Yilmaz *et al.* (2017), is the teacher's classroom management skills. Effective classroom management, in general, is a practice that improves students' independent learning abilities, productivity, and achievement, with the primary goal of preventing interruptions to the teaching and learning process and allowing it to continue in a well-organized teaching and learning environment.

For teachers, maintaining good classroom management continues to be a big concern (Firdaus, 2019). Teachers' classroom management abilities are the critical factors of good classroom climate construction, according to a study by Yilmaz *et al.* (2017). The teacher's communication skills play a significant role in student motivation. Teacher-student relationships formed in a qualified and confident communication environment positively impact both student motivation and academic success. (Yilmaz *et al.*, 2017) Outside of the classroom, informal communication appears to build the relationship between instructors and students, in addition to formal communication abilities in the classroom. Students will be able to discuss their subjects and concerns with their lecturers in this manner and be more driven to work and feel more valuable (Ekiz & Kulmetov, 2016). According to Hodo (2016), teachers must create an effective communication environment and a pleasant learning environment for their students. The studies also show that teachers' ethical behaviour impacts student motivation. Teachers' positive attitudes significantly impact student motivation by affecting students' motivation, attitude toward school and learning, and confidence (Thaker & Tiberewal, 2019). Teachers should aim to maintain a good mood and avoid students' embarrassment, criticism, humiliation, or punishment in the classroom. The views of teachers have a significant impact on student attitudes and behaviours. Beliefs are inherently cognitive and do not change easily unless they are essential for a long time to develop. (Firdaus, 2019) The study of Yilmaz *et al.* (2017) also points out that, in this field, the burnout feeling in the teachers affects the student motivation negatively.

Burnout feelings of teachers can significantly reduce the quality of life and cause deterioration in teaching productivity (Yilmaz *et al.*, 2017). As teachers' burnout rises, student criticism and engagement in classroom preparation and activities fall. As a result,

students' feelings of efficacy in school are frequently lowered; in other words, teacher burnout lowers motivation, which impairs students' learning and involvement. (Ekiz & Kulmetov, 2016) According to Shen *et al.* (2015), teachers' burnout significantly weakens students' motivation. Hodo (2016) also indicated that one of the factors that positively affect student motivation is related to teachers' teaching methods. Bayraktar (2015) claims that to build a successful teaching and learning environment in a classroom, teachers' effective use of methods, strategies, tools, and materials in the relevant teaching field significantly impacts student motivation. Yilmaz *et al.* (2017) also stated that an effective classroom environment that increases student motivation should be sufficient for educators' teaching approaches and tactics. Trainers can better adapt students to the course by employing fascinating and innovative teaching strategies throughout training, which allows them to get motivation for success (Shen *et al.*, 2015).

According to Hodo (2016), When parents and family members become involved, students do better in school and go to better schools. Family involvement has a significant impact on student performance throughout the elementary, middle, secondary, and university years. The shifting values and customs of the family and society significantly affect a student's motivation, academic integration, and performance (Shen, 2015). In recent years, most families have become increasingly concerned about their children's education on all levels, and they have begun to intervene in their education. The father's influence on the students' willingness to learn and their GPA was palpable. This effect can be attributed partly to the fact that some student fathers have a high level of education and others want a better future for their children. (Hodo, 2016)

Family financial status is another factor that impacts students' motivation (Firdaus, 2019). According to Firduas (2019) and Hodo (2016), family financial status is an external motivational factor for more students. When the students' family financial status is high, they do not experience any pressure to help their families financially and usually, they study carefully to be like their parents. Therefore, they dedicate more time to learning. Still, some students with sufficient finances aren't interested in learning because they think they can live on their parents' aid or work in their parents' company. Usually, the students with low economic levels think to be someone in the future and dedicate more time to studying. (Hodo, 2016; Shen *et al.*, 2015) According to Thaker & Tiberewal (2019), high parental expectations provide a desired amount of stress, encouraging students to study and focus

more on their education and future. Yilmaz et al. (2017) also indicated that family expectations also act as a motivational factor for students. According to them, most students, in their endeavour to keep the social and educational status of the family, are highly motivated to study. Firdaus (2019) reiterated that emotional stability is one of the essential factors motivating students to learn. The common observed emotional disturbances among the students related to depression because of love failure, loss of a parent, a relative, a friend, and inability to meet parents' high expectations. Yilmaz *et al.* (2017) concluded that student motivation is not an aspect that is shouldered by a single motivational factor rather a series of factors, when applied together, can help motivate students to improve their performance.

1.2. Intrinsic Motivation and Extrinsic Motivation

1.2.1. Intrinsic motivation

Intrinsic motivation can be defined as motivation that arises from within a person rather than from external or external rewards such as money or grades. The pleasure derived from the activity itself, or the sensation of accomplishment derived from finishing or even working on a task, is the source of motivation. (Santos-Longhurst, 2019) An intrinsically driven person, for example, will love working on a math equation because it is pleasurable. Alternatively, an intrinsically motivated person will solve a problem because the challenge of finding a solution provides a sense of pleasure. (Sleimi & Davut, 2015) In neither situation, the person works on the assignment because they expect a reward, such as a prize, money, or a grade in the case of students (Santos-Longhurst, 2019). According to Cherry (2019), Intrinsic motivation does not imply that a person will not seek incentives. It simply indicates that external incentives are insufficient to keep a person motivated. For example, an intrinsically motivated student may wish to obtain a good mark on an assignment. Still, if the assignment does not interest that student, the prospect of a good score is insufficient to keep that student motivated to work on the project (Li, 2021).

The opposite of intrinsic motivation is extrinsic motivation (Sleimi & Davut, 2015). The latter form of drive comes from somewhere other than yourself. Intrinsic motivation, on the other hand, originates from within the individual. (Santos-Longhurst, 2019) To comprehend the examples of intrinsic motivation, consider them as inspiration. Extrinsic motivation, on the other hand, is nearly equal to instigation. You see, when you're extrinsically motivated,

you're doing something you might not want to do or be interested in. It feels like you're doing a task. On the other hand, labours of love will always be examples of intrinsic motivation. (Li, 2021) According to Di-Domenico (2017), intrinsic motivation always entails doing something that they want to accomplish for themselves. Even if they were not going to get paid, receive an award, or receive a grade for it, the person would do it. According to Sennett (2021), it can assist a person escape life or career of struggle and suffering, as the individual seeks out ways to generate money that they also enjoy. Sennett continued that a person may not take that sales job that he despises because he needs money, and he can get that money by doing that sales position. If a person is a teacher, they can find ways of keeping the subject very vibrant, active, and exciting for the students, thereby getting them more immersed in learning instead of just memorising things to pass a test and then forgetting them later (Santos-Longhurst, 2019). As is well known, it has been seen that motivational speakers use plenty of inspirational quotes about life to help bring out this intrinsic motivation from within the persons to whom they are lecturing (Li, 2021).

Intrinsic motivation refers to what someone will do without being influenced. Simply put, it is a motivation that is not based on external or external rewards such as money or grades. (Legault, 2016) If a person is intrinsically motivated, he will do a task just for pleasure or satisfaction. However, if an individual lacks intrinsic motivation, this does not rule out the possibility of seeking rewards (Sleimi & Davut, 2015). According to Cherry (2019) and Li (2021) intrinsically motivated person acknowledges the perk of rewards, but these rewards are not enough to keep that person motivated. In other words, with or without the reward, the person will continue to do the task for as long as he has an interest or believes in it (Li, 2021). If you can make someone align his values to yours, thus giving him an internal desire for the idea of value, you can set a compelling motivation in the area. That is the power of intrinsic motivation. Plus, unlike extrinsic motivation, intrinsic motivation lasts longer because desires take time to be extinguished. (Di-Domenico, 2017)

1.2.2. Extrinsic motivation

Extrinsic motivation is when a person's motivation comes from outside themselves (Siyuan *et al.*, 2020). Extrinsic motivation is defined by Sennett (2021) as a circumstance in which an individual completes a task or exhibits a behaviour due to external factors such as avoiding punishment or getting a reward. External or external benefits, such as money or

grades, are motivating factors. These incentives bring fulfilment and pleasure that the work would not provide. (Siyuan *et al.*, 2020) Extrinsically motivated people will work on a task even if they are uninterested in it because they anticipate receiving satisfaction from a reward (Meadows-Fernandez, 2018). The benefits might range from anything as insignificant as a happy face to something as significant as fame or money. An extrinsically motivated person who dislikes mathematics, for example, may work diligently on a math equation because he desires the prize for finishing it. (Cherry, 2021) A good mark on an assignment or in class would be the reward in the instance of a student (Krugman, 2021).

On the other hand, extrinsic motivation does not imply that a person will not enjoy working on or finishing a task. It simply means that the pleasure they expect from some external reward will remain a motivation even if the activity at hand is uninteresting. (Siyuan *et al.*, 2020; Krugman, 2021) For example, an extrinsically motivated student may despise an assignment, find it uninteresting, or have no interest in the subject. Yet, the prospect of a good score will keep the student motivated to put up the effort necessary to complete the task. (Legault, 2016) According to Krugman (2021), extrinsic motivation is likely to involve the concept of rewarded behaviour. Thus, by engaging in a particular type of activity or behaving in a specific manner, you are "rewarded" with the desired result. For instance, you are motivated to save money for a vacation. Hence, you resist the urge to make impulsive purchases and, in general, become more discriminating in how you spend your money. After a time, you find that you have a steadily growing amount of savings that you set aside. When you have saved enough for that trip, you utilise your savings for the intended purpose and go on vacation. The external motivation is the vacation, which is also the reward for your act of saving for it. (Meadows-Fernandez, 2018; Cherry, 2021)

1.2.3. Theories of Motivation

There are various motivation theories, such as the instinct theory, which is the source of all motivation, and the survival theory (Gopalan *et al.*, 2017). According to the theory, motivation is caused by biological or genetic programming, and all humans have the same motivation because we all have comparable biological programming (Cherry, 2020a). Then there's the incentive theory, one of the most popular motivation theories. This idea depicts the desire to encourage behaviours for enrichment or incentives. (Cherry, 2020b) Sometimes, we are inspired to undertake actions by internal wishes and desires, and others

by a passion for external rewards. In addition, the arousal theory depicts the highest level of eagerness or arousal. People with high optimal arousal levels will engage in high enthusiastic activities such as bungee jumping, scuba diving, and other extreme sports. In contrast, the rest of us are content with less thrilling and perhaps dangerous hobbies. The ability to do what needs to be done without being influenced by others or situations is depicted in this philosophy. (Gopalan *et al.*, 2017) Intrinsic, extrinsic, and motivation are the three types of motivation (Klingel, 2021).

Furthermore, various theories, particularly in education, could be adopted. The theories under question include the intrinsic and extrinsic motivation theory, self-determination theory (SDT), the ARCS model, social cognitive theory, and expectancy theory. These theories are self-contained in that they can contribute to the learning process' outcome without relying on other educational ideas. (Gopalan *et al.*, 2017)

Intrinsic and extrinsic motivation theory. According to Gopalan *et al.* (2017), Intrinsic motivation is defined as an activity performed just for the satisfaction of oneself, with no external expectations. The essential characteristics that elicit intrinsic drive are a challenge, curiosity, control, and fantasy. To maintain motivation in school, willpower and a positive mindset are imperative. Furthermore, Gopalan *et al.* (2017) assert that intrinsic drive and academic accomplishment have a solid and favourable relationship. Intrinsic motivation encourages people to engage in academic pursuits solely for the enjoyment, challenge, and originality they provide, rather than expecting external prizes, presents, or to be forced to do so (Legault, 2016; Deci & Ryan, 2016). The importance of learning attitude is recognized, and it impacts academic progress (Akçayir *et al.*, 2016; Cai *et al.*, 2016). Intrinsic motivation can disseminate happiness and keep the knowledge obtained for an extended period.

On the other hand, extrinsic motivation refers to external factors such as a reward (Legault, 2016; Deci & Ryan, 2016), compulsion, and punishment (Gopalan *et al.*, 2017). If a person receives a reward or is under any pressure or compulsion, they are extrinsically driven. Motivation can also be generated extrinsically, then transformed into intrinsic motivation as the learning process progresses. This type of motivation generates a lot of willpower and engagement, but it can't last if intrinsic motivation. Suppose pupils are constantly encouraged by external prizes or accolades. In that case, it may become customary for them to perform just for the sake of receiving the benefits rather than for the sake of mastering skills or knowledge. Apart from that, amotivation happens when an individual cannot

accomplish either intrinsically or extrinsically motivated tasks. (Gopalan *et al.*, 2017) Amotivation is a state in which both intrinsic and extrinsic motivation is absent (Marczak & Yawson, 2021). Whether the intrinsic or extrinsic motivation is used to drive students, each has its characteristics. In a learning process, both intrinsic and extrinsic motivation are required. Learning is a complex process, and motivation is the bedrock of this process (Li & Lynch, 2016). As a result, students must be strongly driven to face the challenges, comprehend the process, and apply what they've learned in real-world situations. Intrinsic motivation promotes self-motivated in the pursuit of knowledge, whereas extrinsic drive provides a reason to pursue knowledge (Li & Lynch, 2016).

Self-determination theory. SDT (self-determination theory) develops from intrinsic and extrinsic incentives (Coccia, 2019). On the other hand, extrinsic motivation represents a different significance in its relative sovereignty, whereas intrinsic motivation depicts the human's inherent desire to include numerous elements in the learning process. As a result, it can only reflect either external control or actual self-regulation. In a nutshell, autonomy is linked to choosing and liberty (Gopalan *et al.*, 2017), competence is linked to the sensation of being successful and self-assured in pursuing and completing a task, and relatedness is linked to the experience of being safe and connected in a learning environment (Ulstad, 2017). The environment mentioned above can help students improve their academic performance and motivation (Ulstad, 2017). Aside from that, there are five sub-theories to the self-determination theory. To begin, the Cognitive Evaluation Theory (CET) is a psychological theory that aims to explain how external consequences affect internal motivation (Ross *et al.*, 2016). CET emphasizes the importance of autonomy and skills in promoting intrinsic motivation, which is crucial in education, the arts, sports, and many other fields. Organismic Integration Theory (OIT) and Causality Orientations Theory (COT) were incorporated as sub-theories of self-determination theory (Gopalan *et al.*, 2017).

OIT refers to a range of motivational moods divided into three categories. The focus is on competence at this impersonal or a motivational level. Following that is the fundamental psychological needs theory (BPNT), in which humans' needs are divided into three categories: autonomy, competence, and relatedness. According to a study, the demand for satisfaction is critical for individuals to become involved, driven, and healthy in their progress and well-being. (Ulstad, 2017) Finally, Goal Contents Theory (GCT) demonstrates the distinction between intrinsic and extrinsic motivation regarding basic needs for

satisfaction and well-being. (Coccia, 2019). The intrinsic goals within the social setting are pertinent to the educational environment and more useful for students to focus on intrinsic goals than extrinsic goals to achieve and present a better academic performance (Gopalan *et al.*, 2017).

The ARCS model. According to Gopalan *et al.* (2017), the ARCS model is essential since human motivation is linked to behaviour and emotion. The ARCS Model is got its name after its four main components: attention, relevance, confidence, and satisfaction. Keller presented the model's rough proportions in 1979, born in 1987. (Dinçer, 2020) The ARCS model divides the instructional design process into four stages: attention, relevance, confidence, and satisfaction. Keller focuses on the motivational components of learning rather than delivering the learning information. These components are intended to boost and maintain the learner's motivation. Keller also emphasizes the need for motivation in learning for students. Teachers must foster good attitudes in their students to keep them engaged. (McKivigan, 2019) The ARCS model can be incorporated into the self-determination theory since Students' can be motivated directly using attractive, satisfying, and stimulating learning material provided by their teachers (Dinçer, 2020; Gopalan *et al.*, 2017). The ARCS model is a method for determining and dealing with learning motivation in a methodical fashion (McKivigan, 2019). To begin, capturing students' attention is critical to gaining and maintaining their interest in learning. Second, students' experiences and needs were linked to relevance, and third, students' emotions and anticipation were linked to confidence. (Gopalan *et al.*, 2017) Finally, good feelings about the learning process and the knowledge gained lead to pleasure because of completing the entire learning process (Gopalan *et al.*, 2017; Dinçer, 2020). According to Dinçer (2020) and Gopalan *et al.* (2017), students can be directly motivated by capturing their attention by deploying an appealing and exciting medium or learning material. It is critical to maintain and awaken the student's interest and curiosity throughout the learning process.

1.3. Learning Effectiveness

The degree to which learning outcomes (goals) are attained is called learning effectiveness. Learning outcomes are statements that describe what a learner should know, comprehend, and (or) exhibit after completing a learning process (Kintu *et al.*, 2017). Learning outcomes indicate components of educational accomplishment, such as student perceptions of learning

objectives, learning occurrence, performance improvement, and result attainment (Persky *et al.*, 2020). Student perceptions of learning outcomes have been shown to be substantially associated with actual learning achievement (Bahasoan *et al.*, 2020). According to Kintu *et al.* (2017), research of blended learning environments found that high achievers were more satisfied with the courses than low achievers, implying that high achievers can adjust to different learning environments better than low achievers' peers. However, some experts believe that one's sense of learning may not be related to one's actual knowledge gains (Persky *et al.*, 2020). Furthermore, Persky *et al.* (2020) concluded mixed results in this area. Therefore, it is essential to investigate and provide more empirical evidence on whether perceived learning outcomes are necessary for understanding students' learning achievement and coping with unconventional learning settings. According to Panigrahi *et al.* (2021) and Tsang *et al.* (2021), learning effectiveness is an integrated process through which students engage in a high-quality learning experience. According to Tsang *et al.* (2021), a quality education involves measurable outcomes that are connected to well-defined learning standards within a system that fosters student development. Learning effectiveness is the product of well-thought-out and well-structured learning systems involving students, teachers, and educational institutions. Students' judgments of meaningful growth, which can be assessed through self-assessment, instructor-defined or institutional-defined evaluations, are used to quantify it in whole or in part. Do I know more now than I did before, and how does this new knowledge serve me? is a question that learning effectiveness answers. (Panigrahi *et al.*, 2021)

Persky *et al.* (2020) and Tsang *et al.* (2021) identified three stakeholders (parents, administrators, and educators) and described the importance of Learning effectiveness to them. Learning effectiveness is essential for parents to understand because it measures their students' development. Administrators use learning effectiveness as a standard for student and teacher achievement, and it is crucial in determining a school's or district's overall success. Students' learning effectiveness is vital to educators. It guides critical evaluation of student progress and the refining or redefinition of learning design to meet students' needs and foster higher-order thinking. (Nordin *et al.*, 2021)

1.3.1. Measuring students learning effectiveness

The question of determining how to assess learning efficiency is a difficult one. To put it another way, how can we know whether a course update has improved student learning? In most circumstances, it's up to the individual to decide whether the change was successful. (RCERP, 2020) According to Kandiko and Buckley (2020), such judgments are prone to cognitive biases like selective observation. The instructor may look for evidence that supports their beliefs while dismissing or downplaying conflicting data. Learning efficacy has traditionally been measured in two ways: performance-based assessments of learning and perception-based assessments of learning (RCERP, 2020; Kandiko & Buckley, 2020).

Performance-Based Assessments of Learning: In theory, the best way to assess learning effectiveness is to measure progress on achievement tests. Performance evaluation is a summative assessment tool used to replace high-stakes testing. It is intended to place a greater emphasis on practical or applied skills. Do you know how to put your knowledge to use? Rather than telling me what you know, tell me what you don't know. Other standard terms are authentic assessment and performance-based assessment. The assessment can take the form of an individual or group project, a portfolio (with one or more pieces highlighted), or an open-ended response exercise. (RCERP, 2020) The work's development process is then evaluated using a set of pre-determined criteria or a checklist that has been presented to the student in advance (Famularo *et al.*, 2018). According to a report issued jointly by the Massachusetts Consortium for Innovative Education Assessment and the Center for Collaborative Education (Kandiko & Buckley, 2020), standardized testing is becoming increasingly obsolete in today's educational situations. Traditional testing exacerbates socioeconomic disparities while failing to adequately assess skills before higher education. Students will have more significant input in demonstrating their knowledge in culturally appropriate ways under a new Quality Performance Assessment scheme, which will engage them in ways that standardized assessments cannot. (Maier *et al.*, 2020) According to Famularo *et al.* (2018), performance assessment is beneficial over standardized testing in that.

- Higher-order thinking capabilities and problem-solving abilities are assessed in performance evaluations. These assessments also put other skills to the test, such as time management and clear communication. This leads to a more in-depth and meaningful learning experience.

- High stakes standardized testing determines if students have sufficient knowledge of a subject. On the other hand, performance evaluations check whether students can apply their knowledge correctly in a variety of situations.
- Performance assessments help students monitor themselves if intermediate goals are developed and implemented effectively. This form of metacognition is extremely advantageous to higher-level student learning, especially in a test set.
- Modern teaching tactics such as active learning and critical thinking work hand in hand with performance assessments. Assume a student participates in classroom participation and discussion (and informative evaluation). In such a situation, students will be able to use and evaluate their new skills more efficiently in summative exams, which will eventually reflect in their performance.

Perception Based Assessments of Learning: Another way to assess learning efficacy is to look at student perspectives. In a university setting, this is often accomplished through end-of-semester course evaluation questionnaires. Such surveys have become commonplace in higher education, and they are being pushed as the primary source of data for evaluating university faculty teaching effectiveness. (Benkirane *et al.*, 2019) Most research has revealed that they are the most extensively used source of information for evaluating instructional effectiveness, according to Basera (2019). However, such data is mainly collected to create management information, performance evaluation, and tenure/promotion choices (Lim, 2019). It's debatable how much pupils use it to help them learn more effectively (Benkirane *et al.*, 2019). Traditional course evaluation instruments have been criticized as poor measures of teaching effectiveness since there is rarely, if ever, a link between improvements in teaching and the resulting ratings.

Traditional student evaluations provide little relevant feedback on how to increase student learning for process improvement. (Basera, 2019) Traditional course evaluation instruments have a flaw in that they are based on the "student-as-consumer" approach (Lim, 2019). They are more concerned with what students liked or disliked about the course than how successfully learning objectives were met. Another issue is that they have a "one size fits all mentality. In most cases, a consistent form is employed to allow comparisons across different courses and lecturers. As a result, the questions are not adaptable to the course being evaluated or the teaching methods used. (Lim, 2019) This makes the tool bureaucratically convenient but less beneficial for evaluation and process development, according to Benkirane *et al.* (2019). In general, any educational program's efficacy can only be measured in its learning objectives (Basera, 2019).

1.3.2. Other determinants of learning effectiveness

According to Baber (2020), motivation is one of the most prominent factors and determinants for learning effectiveness. However, students learning effectiveness can be influenced by other factors. Other determinants of learning effectiveness are.

Course Structure. Baber (2020) defined course structure as "the extent to which an education program may accommodate or be sensitive to each learner's specific needs," as well as "the rigidity or flexibility of the program's educational objectives, instructional tactics, and evaluation systems." The course structure is the usefulness of the themes and (Pirmohamed *et al.*, 2017) the grouping of these things so that it is logical and understandable by a student. Before and after a course is taught, the course structure is the development, organization, design, curriculum, pedagogies and techniques, timeline, and general planning of the course. (Adujo, 2018; Julia, Hakim, & Fadlilah, 2019) This rational and understandable structure will aid in improving learning results and, as a result, student satisfaction in the course. Instructors establish a plan that includes intended learning, outcomes, assignment dates, rubrics, and instructions for assignments to encourage student learning and positive outcomes (Tsang *et al.*, 2021). Wu *et al.* (2019) found course structure significantly influencing student satisfaction, which is like the findings of Gray and DiLoreto (2016). In contrast to Gray and DiLoreto's (2016) findings, Baber (2020) concluded no substantial association between course format and learning outcomes.

Instructor to student dialogue. Instructor–student communication is the bi-directional contact between instructors and students that can be noticed when an instructor, for example, gives information, encourages their students, listens to their concerns, or provides feedback. Students communicate with their professors by asking questions and discussing class activities. Student learning and satisfaction were significantly influenced by instructor-student contact. (Wu *et al.*, 2019) It is critical for learning success, as good communication and information sharing are essential for both instructors and students to cope with the changes that may be instituted during the study period. Instructor-student interaction may improve students' knowledge of course materials and pique their enthusiasm for studying. (Baber, 2020)

Student-to-student dialogue. According to Wu *et al.* (2019), the interaction between students is an essential part of any course experience. It is particularly suggestive of a

positive outcome because social support is an important coping technique for students. Students can interact with one another to create a virtual community to compensate for the loss of face-to-face communication. The new platform also allows students to share knowledge and ideas to encourage learning. Student-to-student engagement encourages dialogue and inquiry while also fostering supportive ties among students. Group projects or group talks, for example, are examples of this style of engagement. In an online environment, student-to-student interaction is crucial for fostering community and supporting effective learning through developing problem-solving and critical thinking abilities. In one study, students who displayed high levels of interaction with other students reported high learning outcomes and satisfaction. (Wu *et al.*, 2019)

University Support. Institutional support for learning is vital in optimizing students' academic experiences (Baber, 2020). According to Wu *et al.* (2019), the assistance offered to students by their universities and institutions may involve instructional, peer, and technical support. Adujo (2018) reported that students' perceptions of support were significantly related to their overall satisfaction with online courses. The University's assistance during the Covid-19 period, for example, has been judged particularly important for students to adapt to learning style changes. Students have become more comfortable learning in an online environment thanks to instructional support that provides clear rules and updates on the layout of online sessions. Technical assistance has ensured that lessons operate smoothly to enhance learning during this time. (Wu *et al.*, 2019)

1.4. Impact of Intrinsic and Extrinsic Motivation of Learning effectiveness

Educators believe intrinsic motivation is more desirable and leads to higher learning results than extrinsic motivation. A plethora of research supports the considerable link between intrinsic academic motivation and academic achievement. (Oclaret, 2021) According to the study of Duan *et al.* (2020), both intrinsic and extrinsic motivation have a favorable impact on students' academic achievement. Huo (2018), on the other hand, believes that extrinsic incentive is the most important aspect for teachers to exploit to improve academic achievement and enhance interactive classroom involvement among students. In contrast to Huo (2018), Zaccone and Pedrini (2019) highlighted that intrinsic motivation favours learning efficacy, whereas extrinsic motivation negatively impacts. It also demonstrates that gender plays a role in moderating outcomes.

Hong *et al.* (2017) gathered information from 78 Chinese language students who took part in the study. The findings revealed that their intrinsic passion for Chinese learning predicted students' progress. In a longitudinal study of 47 Latino kids in sixth through eighth grades, researchers looked at how intrinsic motivation affects academic achievement. According to Oclaret (2021), intrinsic motivation is favorably related to students' GPAs and math achievement. In their study, Tripathi and Tripathi (2018) intended to determine the extent of the relationship between intrinsic motivation and academic performance among Indian student-teachers and see if it contributed to the achievement of the goal of excellent education. According to the findings, intrinsic motivation characteristics like creativity and self-efficacy are substantially linked to performance. The role of intrinsic motivation was highlighted in the results. They proposed that educational institutions create a welcoming climate in which student-teachers can express themselves and contribute to the advancement of high-quality education.

According to Tokan & Imakulata (2019), in their research on motivation and learning behaviour on student accomplishment, intrinsic learning motivation is the driving force that emerges from within the students in the form of desire, aspiration, and capacity for example, to become a biology teacher. Intrinsic learning motivation is linked to mental health issues. On the other hand, extrinsic motivation has no direct effect on learning behavior. Extrinsic motivation factors such as parental support, lecturer expertise, infrastructure, and social contact did not affect learning behavior such as attending lectures, studying, visiting the library, preparing for tests, and searching the internet for course materials. Liu *et al.* (2020) investigated the multiplicative effect of intrinsic and extrinsic motives in the same way. The extrinsic motivation was found to be detrimental to academic achievement in students with high intrinsic drive. On the other hand, extrinsic motivation assisted pupils with poor intrinsic motivation improve their academic performance. It's worth noting that intrinsic drive has a moderately good impact on academic achievement.

2. EMPIRICAL STUDY

2.1. EUAS and International Student

EUAS is the largest private university in Estonia, with about 1478 students and over 5000 alumni. Undergraduate and master's programs are offered in English, Russian and Estonian. (EUAS, 2022) EUAS is internationally accredited with four bachelor's study programs (Startup entrepreneurship, creativity and business innovation, software development and entrepreneurship, and game design and development) and one master's study program (International business administration). EUAS Curriculum alignment and cross-border cooperation with SMEs and international accreditation with partners in other Baltic states and Finland. (EUAS, 2022) According to Roberta (2020), EUAS has about 424 international students from Africa, Asia, and other European countries as of 2020. The percentage of international students has been raised from 0.2 to about 20% in the last five years (Ananta, 2019). According to Ananta (2019), EUAS has effective strategies for conducting studies for international students, such as requiring third-country international students to pay the entire first-year tuition fees, indicating that the student is well qualified to continue and complete his or her higher education. The proximity of Ülemiste City and the international house provides a good foundation for growing and developing an international student body. The University Research Information System, which works in three languages and consolidates a vast volume of information into a single platform, has aided lecturers, support personnel, and students in their work.

The fundamental interest of the author is on the subject matter (the effect of intrinsic and extrinsic motivation on student learning effectiveness). The author wished to understand the significance of these two motivational factors on students learning effectiveness. Furthermore, he also seeks to understand if gender plays any role in moderating students' motivation levels. EUAS was chosen because the author is a student of EUAS, and it was convenient to carry out such research. The author narrows the scope of this research to international students of EUAS to focus on a particular group of students who might be encountering similar motivational triggers because they all left home to study in another country.

2.2. Research Design

This study adopts a quantitative research method using a cross-sectional survey research design. According to Disman *et al.* (2017) and Apuke (2017), a quantitative analytic method measures and analyzes variables to obtain results. It entails employing advanced mathematical techniques and evaluating numerical data to answer questions like who, when, how, when, how, and how many (Jansen & Warren, 2020). It can also be defined as collecting numerical data to explain a problem or occurrence (Disman *et al.*, 2017). Furthermore, Farnsworth (2019) stated that a quantitative analysis explicitly specifies the aspect being measured and how the measurement is done to uncover patterns in factors like behavior, motivation, emotion, and cognition. According to Abuhamda *et al.* (2021), quantitative data collection is more structured than qualitative methods. The size of the sample population is another aspect that mandates the choice of research method (Hameed, 2020). According to Hameed (2020) and Mohajan (2018), qualitative research methods are suitable for small data sets or sample populations. The cross-sectional survey research design is excellent for this study since it efficiently collects data from a targeted set of respondents within the population under investigation. According to Zangirolami-Raimundo *et al.* (2018) and Cvetkovic-Vega *et al.* (2021), cross-sectional research collects data from the population or a selected subset at a certain point in time.

2.3. Population of Study and Sample Size

According to Shukla (2020), a study population consists of all the units on which the findings of the research can be applied. In other words, the population is a set of all the units that possess variable characteristics under study and for which research findings can be generalized. The population of study of this research consists of the entire international student population of EUAS. Presently, there are approximately 424 international students studying at both bachelor's and master's levels (EUAS, 2022). Therefore, the population size for the research is 424 international students.

The determination of sample size is an important stage in research methodology. It is the act of deciding how many observers should be included in a statistical sample. In some cases, the increase in precision from a greater sample size is negligible, if not non-existent. (Kaur, 2021) The sample size was chosen from the sample population of 424 international students.

A random sampling technique was used in selecting the respondents of the survey. The Slovin's formula for sample size calculation was used to determine the sample size.

$$C = N / (1 + Ne^2) \quad (1)$$

Where C is the sample size, e is the error tolerance, and N, and total sample population (Susanti *et al.*, 2019). According to Awino & Kipsang (2020) using Slovin's formula, the tolerance error is between 0.05 and 0.01. The author adopted 0.05 as a tolerance error since it has been used by prominent authors in the past. Given a total population of 424 international students, the sample size was calculated as:

$$C = 424 / (1 + 424 * 0.05^2) = 206$$

To deal with the non-response rate, a 10% safeguard provision was made over and above the 206 students. Considering this, a sample size of 226 international students was targeted (Susanti *et al.*, 2019).

2.4. Data Collection technique and questionnaire format

Data collection is the heart of any research design, irrespective of the field of study, as any research begins with specific questions that need to be answered. Data collection is the process of gathering the desirable information carefully, with the least possible distortion, so that the analysis may provide credible answers and stand to logic. (Parveen & Showkat, 2017) The data for the study was obtained from primary sources and secondary sources. The primary data was collected through an online survey that was distributed amongst the international students of EUAS. The survey (questionnaire) had four sections (intrinsic oriented goals, extrinsic oriented goals, and learning effectiveness) developed through previous articles and papers on the same subject matter; Fowler, 2018 & Oclaret, 2021. The author selected specific questions from these two papers to answer the research questions and objectives of this research. The author sent the link for the questionnaire to the university's study department, which then distributed that link to international students through their emails.

The questionnaire was prepared in English as seen in appendices (appendix 1). Closed-ended format questionnaire was used to make it easier for the respondent. Three sections of the questionnaire were prepared in a Likert scale format. And the respondents were asked to

indicate their level of agreement to the statements below. The choices range from Strongly Disagree (SD), Disagree (D), Neutral (N), Agree (A), and Strongly Agree (SA).

The secondary data in this research was gotten from books, and online sources including Google scholars, research Gate, Science direct, and Google.

2.5. Data analysis and presentation

The collected data through the survey was arranged and analysed in Excel and SPSS. The result of the analysis is presented in this section. The data analysis starts with a reliability test to test the validity and reliability of the data collected through the survey: descriptive statistics, Pearson's correlation, regression, and independent sample T-test. The complete questionnaire used in this research can be seen in the appendices (Appendix 1).

2.5.1. Reliability and validity test

According to Middleton (2019), it is essential to consider the reliability and validity of the research methods and instruments of measurement when doing quantitative research. Reliability shows how consistently a method measures something. The results are expected when applying the same method to the same sample under the same conditions. If not, the measurement method may be unreliable (Palomo-López *et al.*, 2020). The validity test refers to how the test measures what it claims to measure. A validity test also tests how inferences, conclusions, and decisions based on test scores are appropriate and meaningful. (Taber, 2018) To test the validity and reliability of the data set, the author employs Cronbach's alpha. According to Diederhofen & Musch (2016), The coefficient alpha of Cronbach's alpha is the most widely used measure of reliability in the social sciences. The computation of coefficient alpha has become routine practice whenever multiple-item scales are used to measure a single construct. Table 1 below presents reliability test results calculated on SPSS.

Table 1. Cronbach's alpha

Case Processing Summary			
		N	%
Cases	Valid	191	90.1
	Excluded ^a	21	9.9
	Total	212	100
Reliability Statistics			
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items	
0.907	0.916	25	

The results presented above show the number of cases (respondents) considered in the calculation (N). Out of the 212 cases, 21 of them were excluded from the calculation because some respondents did not provide answers for all the statements. Therefore, just 191 cases were included in the calculation, which is 90% of the total cases. The results also show the number of items considered in the calculation. The number of items (N=25) refers to the total number of questions or statements with Likert scale items as answers. The results also show that Cronbach's alpha and Cronbach's alpha are based on standardized items. According to Taber (2018), Cronbach's alpha uses the covariances among the items, whereas the alpha based on standardized items uses the correlations among items. The standardized alpha assumes that all the items have equal variances, which is often false. Therefore, the reliability and validity are based on Cronbach's Alpha.

Acceptable reliability and validity occur when Cronbach's alpha is greater or equal to 0.7. The Cronbach's alpha of this data set reported above is 0.907, greater than 0.7. This indicates that the data used for this analysis is valid and reliable.

2.5.2. Demographic profile of respondents

The demographics of the respondents include their gender, age group and cycle of students. The demographics is expressed in terms of the frequency count of the respondents as presented in Table 2 below.

Table 2. Demographic profile of respondents

	Gender	Bachelor's	Master's	Grand Total
Female Age group	Female	35	36	71
	18- 25 years	16	5	21
	26-35 years	15	23	38
	36 years and above	4	8	12
Male age groups	Male	91	50	141
	18- 25 years	36	8	44
	26-35 years	44	33	77
	36 years and above	11	9	20
	Grand Total	126	86	212

The survey registered 212 respondents, 71 females and 141 males. The female respondents make up approximately 33.5% of the total respondents, while the males make up the rest, 66.5%. The number of male respondents is also most twice that of the female respondents. However, the results show that both male and female students participated in the survey. Of the 212 respondents, 126 (59.4%) are bachelor's students, while 86 (40.6%) are master's students. A total of 65 of the respondents (21 females and 44 males) were between the ages of 18 and 25 years old, 115 of them (38 females and 77 males) were between 26 to 35 years old, and 32 of the respondents (12 female and 20 males) were 36 years and above. The general results presented in Table 2 above show that both male and female bachelor's and master's students participated in the survey. Also, the students were from all three age groups. Therefore, all the demographic segments described by the author were represented.

2.5.3. Descriptive analysis of intrinsic motivation

This subsection present descriptive analysis results for the intrinsic motivation goals of the respondents. In this section, the respondents were asking to indicate their level of agreement to seven statements. The choices range from Strongly Disagree (SD), Disagree (D), Neutral (N), Agree (A), and Strongly Agree (SA). The mean and standard deviation of all the statements is presented in Table 3 below.

Table 3. Intrinsic motivational goals

Statements	Mean	Standard deviation
I prefer material that really challenges me, so I can learn new things	4.16	0.77
I prefer material that arouses my curiosity, even if it's difficult to learn	4.00	0.94
I study to improve my skills and gain knowledge	4.51	0.70
I study most times because I enjoy studying	3.64	0.97
No matter how much I like or dislike a class, I still try to learn from it.	3.90	0.93
Sometimes I do more than I must for an assignment to help me understand the material better.	4.00	0.80
I am satisfied with an average grade, if I learn from my mistakes.	3.26	1.27
Grand mean	3.92	0.91

Generally, the results presented in the table above show that the mean of four statements is about 4, with three of the statements having a mean value below 4. All the standard deviations are between approximately 0.7 to 1.3, which shows that the members or answers of the respondents are clustered within one standard deviation from the mean. The grand mean score of the group (intrinsic motivational goals) is approximately 4 (3.92), which according to the Likert scale used in this research is 'Agree'. Statistically, this indicates that the students agree to be intrinsically motivated.

Looking at the statement specifically, *I prefer material that really challenges me, so I can learn new things*; it has a mean of 4.16 and a standard deviation of 0.77. This indicates that most respondents (173, 81.6%) agree with this question (see appendix 2). The statements *I prefer material that arouses my curiosity, even if it's difficult to learn*, *I study to improve my skills and gain knowledge*, and *sometimes I do more than I must for an assignment to help me understand the material better*. All had a mean of above 4, indicating that more than 75% of the respondents agree with these three statements.

Out of all the statements (*I am satisfied with an average grade if I learn from my mistakes*), the last statement has a minor mean of 3.26 and a standard deviation of 1.27. Statistically, this indicates that most of the responses are between disagreeing and agreeing. Approximately 30% of the respondents disagree with this statement, while about 22% are

neutral, and 47% agree. *I study most time because I enjoy studying*, has the second smallest mean of 3.64 and a standard deviation of 0.97. However, 57% of the respondents agree with this question, with only 10% of the respondents disagree. The mean of less than 4 in this statement is a result of approximately 32% of the neutral respondents.

2.5.4. Descriptive analysis of extrinsic motivation

The descriptive analysis results for the extrinsic motivation goals of the respondents are presented in this subsection. Here, the respondents were asked to indicate their level of agreement to nine statements. The choices range from Strongly Disagree (SD), Disagree (D), Neutral (N), Agree (A), and Strongly Agree (SA). The mean and standard deviation of all the statements is presented in Table 4 below.

Table 4 Extrinsic motivational goals

Statements	Mean	Standard Deviation
Getting a good grade is the most satisfying thing for me	4.07	0.95
The most important thing for me is to improve my overall grade point average, so my concern is getting a good grade.	3.83	1.00
I want to get better grades than most of the other students in my classes.	3.69	1.08
I want to do well in my classes because it's important to show my ability to my family, friends, employer, or others.	3.79	1.05
I feel more accepted by others when I receive a good grade on a test	3.38	1.12
I like to be one of the most recognized students in the classroom.	3.54	1.10
I feel that the smarter I am, the more accepted I will be by other students.	3.41	1.17
I study because I want to do well in my examination	3.89	0.94
I study most time because I need good grades to further my studies and get a good job	4.01	0.91
Grand mean	3.73	1.03

The results in Table 4 above show that the extrinsic motivational goals have a grand mean score of 3.73 and a standard deviation of 1.03. Statistically, this can be explained as being between neutral and agree according to the Likert scale item used in this research. Specifically, the highest mean values in this group were registered by the statements; *Getting*

a good grade is the most satisfying thing for me, and I study most time because I need good grades to further my studies and get a good job, with mean values of 4.07 and 4.01 respectively. Approximately 75% of the respondents agree with these statements (see appendix 2).

The statements: *I feel more accepted by others when I receive a good grade on a test, and I feel that the smarter I am, the more accepted I will be by other students*, registered mean values of below 3.5 and standard deviations of above 1. Approximately 50% of the respondents agree with these two questions. However, a significant % of the respondents stayed neutral in the statement (28% and 26%, respectively), which is responsible for their low mean values. The other statements in the group registered mean values of between 3.5 to 3.89, and a significant percentage of the respondents also agreed with these questions. According to Kasenge (2020), a mean score of 3.41 to 4.19 on this Likert scale is considered as agreed. Therefore, the grand mean score of 3.72 is statistically considered as agreed, which means the respondents also agree to be extrinsically motivated. However, when both grand mean scores are considered, it can be said that the respondents and students of EUAS who took part in this survey are more intrinsically motivated than they are extrinsically motivated.

2.5.5. Descriptive analysis of learning effectiveness

The last section of the survey was on the learning effectiveness of the students. This section aimed at testing the learning effectiveness of the students based on their opinions. Like the other two sections, the respondents were required to indicate their level of agreement to nine statements as presented in Table 5 below.

Table 5. Learning effectiveness

Statements	Mean	Standard Deviation
I believe I'll receive excellent grades in my classes.	4.06	0.76
I'm certain I can understand the most difficult material presented in all my courses	3.75	0.93
I'm confident I am learning the basic concepts that are being taught	4.04	0.74
I'm confident I can understand the most complex material presented by the instructor	3.69	0.95
I'm confident I can do an excellent job on assignments and tests	4.04	0.79
I'm certain I can master the skills being taught	4.10	0.71
Considering the difficulty of the classes, the teachers, and my skills, I think I can do well	4.06	0.73
I think I will be able to use what I learn so far in future	4.27	0.74
I feel like I can freely communicate with the instructor in most of my courses	4.17	0.81
Grand mean	4.02	0.80

The result presented in the table above shows that almost all the statements registered mean values above 4, except for two statements. *I'm certain I can understand the most difficult material presented in all my courses* and *I'm confident I can understand the most complex material presented by the instructor*, with mean values of 3.75 and 3.69, respectively. Statistically, according to Kasenge (2020), both mean values are considered as agreed, so the respondents agree to all the statements under learning effectiveness. The statement registered the highest mean in the group (4.17); *I feel like I can freely communicate with the instructor in most of my courses*. Approximately 82% of the respondents agree that they can freely communicate with the class instructor. According to Wu et al. (2019), instructor-to-student dialogue is one of the determinants of learning effectiveness. Students who communicate freely with their instructors and lecturers tend to learn more than those who can't or avoid communicating with instructors (Baber, 2020).

Famularo et al. (2018) identify performance-based assessment as one of the oldest ways to measure students' learning effectiveness. The statement: *I believe I'll receive excellent grades in my classes*, has a mean of 4.06, which indicates that the students agree that they will receive excellent grades. This, according to performance-based assessment, is a good

level of learning effectiveness. Generally, this section has a grand mean of 4.02, which statistically indicate that the students (in their opinion) have a high level of learning effectiveness.

2.5.6. Pearson's correlation

According to Williams (2020), the Pearson correlation measures the strength of a linear relationship between two variables. It ranges from -1 to 1, with -1 indicating a total negative linear correlation, 0 indicating no correlation, and + 1 indicating an absolute positive correlation. The author used Pearson's correlation to measure the relationship between the variables after performing a linearity check (intrinsic motivation and extrinsic motivation against learning effectiveness) on SPSS. The linearity check shows a statistically linear relationship between the variables (p-values were less than 0.05). The assessment also indicates that there was no statistical deviation from Linearity (see appendix 3). The results of the Pearson's correlation are presented in Table 6 below.

Table 5. Pearson's correlation

Correlations				
		Intrinsic motivation	Extrinsic motivation	Learning effectiveness
Intrinsic motivation	Pearson Correlation	1	.418**	.600**
	Sig. (2-tailed)		<.001	<.001
	N	212	212	212
Extrinsic motivation	Pearson Correlation	.418**	1	.489**
	Sig. (2-tailed)	<.001		<.001
	N	212	212	212
Learning effectiveness	Pearson Correlation	.600**	.489**	1
	Sig. (2-tailed)	<.001	<.001	
	N	212	212	212
**. Correlation is significant at the 0.01 level (2-tailed).				

The Pearson's correlation result presented above gives information for the following: N is the total number of respondents registered by the survey. The Pearson's correlation coefficient (R) indicates the magnitude and direction of the relationship, and the Sig. (2-

tailed) calculated on an alpha of 0.01, indicating whether the relationship is statistically significant or not.

$R=.418$ and $\text{Sig. (2-tailed)} = <.001$ for the relationship between intrinsic and extrinsic motivations indicates a moderate statistically significant positive linear relationship between the two variables. The magnitude of this relationship is moderate; therefore, increases in one variable group might cause a correspondent increase in the other variable group. (Williams, 2020)

$R=.600$ and $\text{Sig. (2-tailed)} = <.001$ for the correlation between intrinsic motivation and learning effectiveness indicates a strong (or high) statistically significant positive linear relationship between the two variables. Significantly, increasing one variable group will cause a corresponding increase in the other variable group. (Williams, 2020)

$R=.489$ and $<.001$ for the relationship between extrinsic motivations and learning effectiveness indicate a moderate statistically significant positive linear relationship between the two variables. Therefore, increases in one variable group might cause a corresponding increase in the other variable group. (Williams, 2020)

The results of the three relationships (correlations) expressed above imply that there a stronger linear relationship between intrinsic motivation and learning effectiveness than that between extrinsic motivation and learning effectiveness. Secondly, an increase in intrinsic motivation will increase students' learning effectiveness. Thirdly, due to the magnitude of the relationship between extrinsic motivation and learning effectiveness, extrinsic motivation might increase learning effectiveness.

2.5.7. Regression analysis

One of the most important statistical tools for examining the relationship between variables is regression analysis. It investigates the linear relationship between one or more metric-scaled independent variables and a metric-scaled dependent variable (also known as a predicted variable) (also called predictor variable). (Younas & Ali, 2021) According to Skiera *et al.* (2018), regression analysis is a mathematical method of determining which factors have an effect. It responds to the question, "What factors are most important?" Which of them can we ignore? What is the relationship between those variables? And, probably most critically, how confident are we in each of these variables? The regression results

calculated on SPSS with intrinsic and extrinsic motivation as independent variables and learning effectiveness as the dependent variables are presented in Table 7 and Table 8 below. The full results and calculations can be seen in appendix 4.

Table 6. Regression model summary and ANOVA results

Items	Values
R	0.655
R Square	0.428
Adjusted R Square	0.423
Sig.	<.001

The regression between the dependent variable (learning effectiveness) and the independent variables (intrinsic and extrinsic motivation) gives the following results.

$R=0.655$ indicates a strong positive linear relationship between the dependent and the independent variables. Therefore, if both independent variables are increased as a pair, the dependent variables will also increase.

$R^2 = 0.428$ indicates that the independent variable can explain 42.8% of the dependent variable. Simply, intrinsic and extrinsic motivations can explain 42.8% of the dependent variable (learning effectiveness).

Adjusted R Square is similar to R^2 and shows that intrinsic and extrinsic motivations can explain 42.3% of learning effectiveness.

Sig. $= <.001$ calculated on an alpha of 0.05 indicates a statistically significant dependency between the variables. Statistically speaking, 42.3% of learning effectiveness depends on both intrinsic and extrinsic motivations.

Model summary and ANOVA calculates the effect of intrinsic and extrinsic motivation on learning effectiveness as a pair. To fully understand the individual effect of intrinsic and extrinsic motivations on learning effectiveness, the author examines the regression coefficient results presented in Table 8 below.

Table 7. Regression coefficient result

Coefficients						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.053	0.239		4.396	<.001
	Intrinsic motivation	0.525	0.063	0.479	8.327	<.001
	Extrinsic motivation	0.242	0.048	0.289	5.015	<.001
a. Dependent Variable: Learning effectiveness						

The coefficient results are given in both standardized and unstandardized forms. The standardized results express the impacts in standard deviation, while unstandardized results are expressed in simple numbers. Since motivation and learning effectiveness are items that cannot be simply expressed in numbers, also Ali & Younas (2021) suggested that standardized coefficients are more suitable for explaining regression results. Therefore, the author chooses to present the results in a standardized form. The standardized coefficients Beta indicates the degree to which the independent variable impacts the dependent variable, or the dependent variable's level depends on the independent variables. The sig. values for intrinsic and extrinsic motivation are below 0.05, which means the results are statistically significant.

The standardized coefficients beta = 0.479 for intrinsic motivation indicate that an increase in 1 standard deviation of intrinsic motivation will cause an increase of 0.479 standard deviations in learning effectiveness. While the standardized coefficients beta = 0.289 for extrinsic motivation indicates that an increase in 1 standard deviation of extrinsic motivation will increase learning effectiveness by a standard deviation of 0.289. Therefore, intrinsic motivation causes a more significant increase in learning effectiveness, which means learning effectiveness is more dependent to a certain degree on intrinsic motivation than on extrinsic motivation.

2.5.8. Independent sample T-Test

The research takes gender into account as a moderating factor to determine whether learning effectiveness is more robust for one of the genders at equal intrinsic and extrinsic motivation levels. The author performs an independent sample T-test assuming unequal variances to determine this. This variant of the T-test is chosen because the number of male and female respondents is not equal. The result is calculated in excel and is presented in Table 9 below.

Table 8. T-Test: Two-Sample Assuming Unequal Variances

	Male	Female
Mean	4.02886	3.98943662
Variance	0.34898	0.35359604
Observations	141	71
df	140	
t Stat	0.4566	
P(T<=t) one-tail	0.32433	
t Critical one-tail	1.65581	
P(T<=t) two-tail	0.64867	
t Critical two-tail	1.97705	

The results presented in the table above show the mean for learning effectiveness for male and female respondents. The result indicates that the mean values for males and females are different. However, the p-values for both one-tail and two-tail are higher than 0.05. This shows no statistically significant difference in the mean of learning effectiveness for males and females. Therefore, learning effectiveness is not more robust for any gender than the other.

3. DISCUSSION AND SUGGESTIONS

Motivation drives guidance, control, and persistence in human behavior. Which describes what strengthens and guides a person's behavior? Pushing someone to achieve a desired course of action or pressing the right button to achieve the desired reaction is motivation. However, inspiration comes from intrinsic and extrinsic energies that drive humans to act with an inner drive to do something that causes them to persevere. The questions of which of these forms of motivation impact students the most have been a born of contention in the academic sphere. This research was carried out to investigate the effect of intrinsic and extrinsic motivations on students' learning effectiveness while considering gender as a moderating factor. The author designed quantitative research with the aid of an electronic survey which yielded a total of 212 respondents. The research process was navigated through three research questions as presented in the introductory part of this research.

The first research question looked at the effects of intrinsic motivation on students' learning effectiveness. The descriptive statistics result suggests that intrinsic motivation has a positive impact on students learning effectiveness, evidenced by the fact that the respondents have a high level of agreement about being intrinsically motivated. Furthermore, the results of Pearson's correlation also reveal a strong positive relationship between intrinsic motivation and students' learning effectiveness which also suggests that intrinsic motivation increases students' learning effectiveness. Results of the regression analysis also indicate that students' learning effectiveness is almost 50% dependent on intrinsic motivation. Therefore, this research suggests that intrinsic motivation positively affects student learning effectiveness.

The second research question was on the effects extrinsic motivation has on students' learning effectiveness. The descriptive statistics results show that a significant percentage of the students who took part in this survey were extrinsically motivated. The results suggest that extrinsic motivation also has a significant favourable influence on students' learning effectiveness. Pearson's correlation and regression results also indicate a statistically significant positive impact of extrinsic motivation on students learning effectiveness. Therefore, extrinsic motivation also has positive effects on students' learning effectiveness. However, the magnitude of influence or effect of intrinsic and extrinsic motivation on students' learning effectiveness differs.

All calculations indicate that intrinsic motivations have more potent effects on students' learning effectiveness than extrinsic motivations. This result is similar to Hong *et al.* (2017), who revealed that students' intrinsic passion for learning predicted students' progress more than extrinsic passion. The results also aligned with Oclaret (2021), whose intrinsic motivation is favourably related to students' GPAs and math achievement, and Tripathi and Tripathi (2018), who concluded that intrinsic motivation characteristics are substantially linked to performance than extrinsic motivation characteristics. Suggestively, intrinsic motivation has a more substantial effect and motivates students the most. Nevertheless, the research also reveals that extrinsic motivation (despite being less motivative than intrinsic motivation) also has a significant and undeniable influence on students' learning effectiveness. Also, these two motivational factors as a pair have a substantial effect on students learning effectiveness. This suggestion also ties with that of Duan *et al.* (2020), who indicated that intrinsic and extrinsic motivation positively impacts students' academic achievement. Therefore, both forms of motivation help increase students' learning effectiveness and should be applied together to get better results.

The last research question was 'Does gender moderate the effect of intrinsic and extrinsic motivation on the learning effectiveness of students?' aimed at determining whether learning effectiveness is more robust for one of the genders. The independent sample T-test result reveals that there is no statistically significant difference in the mean of learning effectiveness for males and females. Therefore, learning effectiveness is not more robust for any gender. This indicates that at equal motivation levels, learning effectiveness for male and female students is the same. So, both male and female students are expected to learn equally if motivated in the same way.

Suggestions based on results:

- Based on the findings and conclusion of the study, the following recommendations are hereby offered:
- Extrinsic motivation is an essential factor in learning. Therefore, parents and teachers should provide enough extrinsic motivation to students.
- A combined research method (qualitative and quantitative) allows students to freely express their views on these subjects.
- Further research is required to ascertain or find answers as to how students' intrinsic motivation can be increased.
- The study was limited to English-speaking students (who might have a similar culture); further research is required to get students' views from other language ramifications and cultures.

SUMMARY

Badubi (2017) describes motivation as pushing someone to achieve a desired course of action or pushing the right button to achieve the desired reaction. According to Siyuan *et al.* (2020), motivation powers people to achieve high-performance levels and overcome barriers to change. Motivation can significantly impact students' performance and outcomes in education, so most scholars have suggested motivational factors that stakeholders who want to assist students in improving their academic performance should be aware of. Some scholars like Yilmaz *et al.* (2017) believe that one of the most critical factors determining student motivation is the teacher's classroom management skills. Effective classroom management, in general, is a practice that improves students' independent learning abilities, productivity, and achievement, with the primary goal of preventing interruptions to the teaching and learning process and allowing it to continue in a well-organized teaching and learning environment. Firdaus (2019) suggested that maintaining good classroom management continues to be a big concern for teachers. Teachers' classroom management abilities are critical for good classroom climate construction. The teacher's communication skills play a significant role in student motivation. Teacher-student relationships formed in a qualified and confident communication environment positively impact student motivation and academic success. (Yilmaz *et al.*, 2017)

Another school of thought believes that other stakeholders, such as students' relatives, can also help motivate them (Hodo, 2016). Family involvement significantly impacts student performance throughout the elementary, middle, secondary, and university years. The shifting values and customs of the family and society affect a student's motivation, academic integration, and performance (Shen, 2015) substantially. Family financial status is another factor that impacts students' motivation (Firdaus, 2019). According to Firdaus (2019) and Hodo (2016), family financial status is an external motivational factor for more students.

Stakeholders are just a single aspect of motivation, the type of motivation that comes from outside a student. Yilmaz *et al.* (2017) explained that student motivation is not an aspect that is shouldered by a single motivational factor rather, a series of factors, when applied together, can help motivate students to improve their performance. Motivational factors are of two forms: extrinsic and intrinsic. Santos-Longhurst, (2019) defines intrinsic motivation

as motivation that arises from within a person rather than from external or external rewards such as money or grades. An intrinsically driven person, for example, will love working on a math equation because it is pleasurable. Alternatively, an intrinsically motivated person will solve a problem because the challenge of finding a solution provides a sense of pleasure. (Sleimi & Davut, 2015) According to Cherry (2019) and Gopalan *et al.* (2017), Intrinsic motivation does not imply that a person will not seek incentives. It simply indicates that external incentives are insufficient to keep a person motivated. The opposite of intrinsic motivation is extrinsic motivation (Sleimi & Davut, 2015). The latter form of drive comes from somewhere other than yourself. Intrinsic motivation, on the other hand, originates from within the individual. (Santos-Longhurst, 2019)

Learning outcomes (effectiveness) are statements that describe what a learner should know, comprehend, and (or) exhibit after completing a learning process (Kintu *et al.*, 2017). According to Persky *et al.* (2020), learning outcomes indicate components of educational accomplishment, such as student perceptions of learning objectives, learning occurrence, performance improvement, and result attainment. Student perceptions of learning outcomes have been shown to be substantially associated with actual learning achievement (Bahasoan *et al.*, 2020). According to Panigrahi *et al.* (2021), learning effectiveness is an integrated process through which students engage in a high-quality learning experience. While Tsang *et al.* (2021) stated that quality education involves measurable outcomes that are connected to well-defined learning standards within a system that fosters student development. Therefore, learning effectiveness is the product of well-thought-out and well-structured learning systems involving students, teachers, and educational institutions. Students' judgments of meaningful growth, which can be assessed through self-assessment, instructor-defined, or institutional-defined evaluations, are used to quantify it in whole or in part. (Panigrahi *et al.*, 2021)

According to Kandiko and Buckley (2020), the question of how to assess learning efficiency is prone to cognitive biases like selective observation. They suggested that it is not easy to determine how and what tools should be used. However, learning efficacy has traditionally been measured in two ways: performance-based and perception-based assessments of learning (RCERP, 2020; Kandiko & Buckley, 2020).

This research aims to investigate the effect of intrinsic and extrinsic motivations on students' learning effectiveness while taking gender into account as a moderating factor. The study

was mandated by the difference in opinions on which motivational factors (intrinsic or extrinsic) motivate students the most.

The study found that intrinsic and extrinsic motivations positively affect student learning effectiveness. However, intrinsic motivations have more potent effects on students' learning effectiveness than extrinsic motivations. The study also found no significant difference in the mean of learning effectiveness for males and females. This indicates that at equal motivation levels, learning effectiveness for male and female students is the same. Therefore, both male and female students are expected to learn equally if motivated in the same way.

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Appendix 1. Survey Questionnaire

Section A: Demographics

Gender: a) Male, b) female

Age group: a) 18- 25 years, b) 26-35 years c) 36 years and above

Study cycle: a) Bachelor’s b) Master’s

Section B: Intrinsic oriented goals

Please do indicate your level of agreement to the statements below. The choices range from Strongly Disagree (SD), Disagree (D), Neutral (N), Agree (A), and Strongly Agree (SA).

	SD	D	N	A	SA
I prefer material that really challenges me, so I can learn new things					
I prefer material that arouses my curiosity, even if it's difficult to learn					
The most satisfying thing for me is trying to understand the content as thoroughly as possible.					
I choose assignments that I can learn from even if they don't guarantee a good grade					
I study to improve my skills and gain knowledge					
I study most times because I enjoy studying					
No matter how much I like or dislike a class, I still try to learn from it.					
Sometimes I do more than I must for an assignment to help me understand the material better.					
I am satisfied with an average grade, as long as I learn from my mistakes. I am satisfied with an average grade, as long as I learn from my mistakes.					

Section C: Extrinsic oriented goals

Please do indicate your level of agreement to the statements below. The choices range from Strongly Disagree (SD), Disagree (D), Neutral (N), Agree (A), and Strongly Agree (SA).

	SD	D	N	A	SA
Getting a good grade is the most satisfying thing for me					
The most important thing for me is to improve my overall grade point average, so my concern is getting a good grade.					
I want to get better grades than most of the other students in my classes.					
I want to do well in my classes because it's important to show my ability to my family, friends, employer, or others.					
I feel more accepted by others when I receive a good grade on a test I feel more accepted by others when I receive a good grade on a test					
I like to be one of the most recognized students in the classroom. I like to be one of the most recognized students in the classroom.					
I feel that the smarter I am, the more accepted I will be by other students.					
I study because I want to do well in my examination					
I study most time because I need good grades to further my studies and get a good job					

Section D: Learning effectiveness

Please do indicate your level of agreement to the statements below. The choices range from Strongly Disagree (SD), Disagree (D), Neutral (N), Agree (A), and Strongly Agree (SA).

	SD	D	N	A	SA
I believe I'll receive excellent grades in my classes.					
I'm certain I can understand the most difficult material presented in all my courses					
I'm confident I am learning the basic concepts that are being taught					
I'm confident I can understand the most complex material presented by the instructor					
I'm confident I can do an excellent job on assignments and tests					
I'm certain I can master the skills being taught					
Considering the difficulty of the classes, the teachers, and my skills, I think I can do well					
I think I will be able to use what I learn so far in future					
I feel like I can freely communicate with the instructor in most of my courses					

Appendix 2. Frequency distribution results

Intrinsic motivational goals	Strongly Disagree		Disagree		Neutral		Agree		Strongly Agree	
	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count
I prefer material that really challenges me, so I can learn new things	0.47%	1	0.94%	2	16.98%	36	45.28%	96	36.32%	77
I prefer material that arouses my curiosity, even if it's difficult to learn	2.36%	5	4.25%	9	16.51%	35	44.34%	94	32.55%	69
I study to improve my skills and gain knowledge	0.48%	1	0.48%	1	7.62%	16	30.00%	63	61.43%	129
I study most times because I enjoy studying	2.36%	5	8.02%	17	32.55%	69	37.26%	79	19.81%	42
No matter how much I like or dislike a class, I still try to learn from it.	1.90%	4	7.14%	15	16.19%	34	49.05%	103	25.71%	54
Sometimes I do more than I must for an assignment to help me understand the material better.	0.00%	0	3.33%	7	21.90%	46	46.67%	98	28.10%	59
I am satisfied with an average grade, as long as I learn from my mistakes.	10.48%	22	20.00%	42	21.90%	46	28.57%	60	19.05%	40
Total respondents	212									
Respondents who skipped this question	0									

Extrinsic motivational goals	Strongly Disagree		Disagree		Neutral		Agree		Strongly Agree	
	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count
Getting a good grade is the most satisfying thing for me	2.36%	5	2.83%	6	18.87%	40	37.74%	80	38.21%	81
The most important thing for me is to improve my overall grade point average, so my concern is getting a good grade.	1.42%	3	9.00%	19	24.17%	51	36.02%	76	29.38%	62
I want to get better grades than most of the other students in my classes.	3.32%	7	10.43%	22	27.49%	58	31.75%	67	27.01%	57
I want to do well in my classes because it's important to show my ability to my family, friends, employer, or others.	2.36%	5	8.49%	18	27.83%	59	30.19%	64	31.13%	66
I feel more accepted by others when I receive a good grade on a test	6.16%	13	15.64%	33	28.44%	60	33.65%	71	16.11%	34
I like to be one of the most recognized students in the classroom.	4.74%	10	11.85%	25	29.86%	63	32.23%	68	21.33%	45
I feel that the smarter I am, the more accepted I will be by other students.	8.13%	17	13.40%	28	26.32%	55	33.49%	70	18.66%	39
I study because I want to do well in my examination	1.42%	3	6.60%	14	21.70%	46	41.98%	89	28.30%	60
I study most time because I need good grades to further my studies and get a good job	1.42%	3	3.79%	8	20.38%	43	40.76%	86	33.65%	71
Total respondents	212									
Respondents who skipped this question	0									

Learning effectiveness	Strongly Disagree		Disagree		Neutral		Agree		Strongly Agree	
	Percenta	Count	Percenta	Count	Percenta	Count	Percenta	Count	Percenta	Count
I believe I'll receive excellent grades in my classes.	0.00%	0	1.43%	3	21.43%	45	46.67%	98	30.48%	64
I'm certain I can understand the most difficult material presented in all my courses	0.96%	2	8.61%	18	27.27%	57	40.67%	85	22.49%	47
I'm confident I am learning the basic concepts that are being taught	0.47%	1	1.42%	3	18.40%	39	53.30%	113	26.42%	56
I'm confident I can understand the most complex material presented by the instructor	2.38%	5	7.14%	15	29.52%	62	41.43%	87	19.52%	41
I'm confident I can do an excellent job on assignments and tests	0.00%	0	3.33%	7	19.05%	40	47.62%	100	30.00%	63
I'm certain I can master the skills being taught	0.00%	0	0.95%	2	17.62%	37	51.90%	109	29.52%	62
Considering the difficulty of the classes, the teachers, and my skills, I think I can do well	0.48%	1	0.96%	2	17.70%	37	53.59%	112	27.27%	57
I think I will be able to use what I learn so far in future	0.00%	0	1.43%	3	13.33%	28	41.90%	88	43.33%	91
I feel like I can freely communicate with the instructor in most of my courses	0.00%	0	3.83%	8	14.35%	30	43.06%	90	38.76%	81
Total respondents	212									
Respondents who skipped this question	0									

Appendix 3. Linearity test

The linearity test was conducted between intrinsic and extrinsic motivations variable groups against learning effectiveness.

			Sum of Squares	df	Mean Square	F	Sig.
Learning * Intrinsic	Between Groups	(Combined)	35.148	22	1.598	7.836	<.001
		Linearity	26.505	1	26.505	130	<.001
		Deviation from Linearity	8.643	21	0.412	2.019	0.084
	Within Groups		38.535	189	0.204		
	Total		73.682	211			

ANOVA Table

			Sum of Squares	df	Mean Square	F	Sig.
Learning * Extrinsic	Between Groups	(Combined)	31.472	31	1.015	4.329	<.001
		Linearity	17.601	1	17.601	75.057	<.001
		Deviation from Linearity	13.871	30	0.462	1.972	0.093
	Within Groups		42.21	180	0.235		
	Total		73.682	211			

Appendix 4. Full regression results

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.655 ^a	.428	.423	.44888

a. Predictors: (Constant), Extrinsic, Intrinsic

b. Dependent Variable: Learning

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	31.571	2	15.786	78.345	<.001 ^b
	Residual	42.111	209	.201		
	Total	73.682	211			

a. Dependent Variable: Learning

b. Predictors: (Constant), Extrinsic, Intrinsic

Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	
	B	Std. Error	Beta			
1	(Constant)	1.053	.239		4.396	<.001
	Intrinsic	.525	.063	.479	8.327	<.001
	Extrinsic	.242	.048	.289	5.015	<.001

a. Dependent Variable: Learning