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THE INTERPLAY OF INTRINSIC AND EXTRINSIC MOTIVATION IN ACADEMIC ACHIEVEMENT: A COMPREHENSIVE REVIEW

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ABSTRACT

Motivation is a central element in shaping students' engagement, learning outcomes, and cognitive development, thus directly influencing participation, persistence, and academic achievement. Both intrinsic and extrinsic motivation differently affect the processes involved in learning-intrinsic motivation enhances deep learning, creativity, and long-term engagement, while well-structured extrinsic motivators help to increase short-term performance and goal attainment. Accordingly, this study has used a literature-based analytical review, informed by the PRISMA 2020 framework, to explore the joint influences of intrinsic and extrinsic motivation on academic achievement. A wide-ranging literature search was conducted in major academic databases such as ERIC, Scopus, PsycINFO, Web of Science, and Google Scholar for studies published within a period between 2000 and 2024. A total of 950 records identified through preliminary searches, by following PRISMA principles, were screened and assessed using predefined inclusion and exclusion criteria, which led to the eventual selection of 58 studies for in-depth analysis. Data from these studies were thematically analyzed through the lens of key theoretical frameworks, including Self-Determination Theory, Expectancy-Value Theory, Flow Theory, and Social Cognitive Theory. This review sought to analyze research on the role of intrinsic and extrinsic motivation in academic achievement, identify factors in motivational balance, explore short- and long-term effects of extrinsic motivators, and make evidence-based recommendations for educators. Results indicate that intrinsic motivation, emanating from autonomy, competence, and relatedness, sustains learning and is more engaging academically, whereas extrinsic motivation can complement intrinsic drives if well-designed and appropriately implemented. However, over-reliance on external rewards might undermine intrinsic interest and creativity. A

balanced motivational framework, therefore, combining both intrinsic and extrinsic aspects, is important to optimize learning environments for ensuring continued academic achievement. It points to autonomy-supportive teaching, mastery-oriented feedback, and culturally responsive practices as key enablers of student motivation. Gaps in related literature, especially relating to neural, technology-related, and sociocultural influences of motivation, have also been highlighted and could be areas for further research. The synthesis of available evidence through this PRISMA-guided review offers theoretical and practical insights to help educators, policymakers, and researchers understand how best to enhance student motivation and lifelong learning outcomes.

KEYWORDS: *Intrinsic motivation, Extrinsic motivation, Academic achievement, Student engagement, Learning outcomes*

Introduction

Motivation is a drive that is considered important to engage students in learning. That is, highly motivated students are more likely to participate in class discussions, carry out assignments, and engage in challenging tasks than less motivated students. Motivated learners also tend to exhibit greater persistence and resilience when faced with academic difficulties. Hence, they are more likely to get through the difficulties and setbacks and to thus remain on a smoother path toward their goals (Duckworth et al., 2007). Additionally, motivation has effects on such important cognitive processes as attention, information processing, and memory. To put it another way, motivated learners process information more deeply, which leads to better understanding and longer retention of knowledge (Pintrich & Schunk, 2002).

Whereas intrinsic and extrinsic motivation impact learners in different yet interrelated ways, individual strengths and learning contexts help explain how these differences manifest. According to scholars, intrinsic motivation, one driven by internal factors such as curiosity, personal interest, and enjoyment, creates deeper engagement, creativity, and longer-lasting interest in a subject (Deci et al., 1991; Hidi & Renninger, 2019). Extrinsic motivation, on the other hand, engages individuals in activities for rewards or to avoid punishment, and hence its impact on learning outcomes varies with the way it is implemented (Cameron & Pierce, 1994). While intrinsic motivation has often been thought to be more conducive to meaningful learning, some well-engineered extrinsic motivators can indeed improve short-term performance and contribute incrementally to the growth of intrinsic motivation when implemented appropriately (Ryan & Deci, 2000).

Intrinsic and extrinsic motivation, therefore, play in complex and multifaceted ways. It cannot be seen in simple dichotomous terms since both forms of motivation can be complementary in influencing students' academic engagement and achievement. In effective educational practices, such motivational types interact differently and require nuanced understanding. When educators have struck a balance, skillfully blending

intrinsic and extrinsic motivational strategies, they create learning environments that support autonomy, competence, and relatedness-the key psychological needs that sustain engagement and success. (Gottfried et al., 2009)

In contemporary education research, motivation has become a focal point of improving student learning results, considering the global turn toward learner-centered pedagogy and 21st-century skills. A deeper understanding of motivational dynamics will better position teachers to develop instructional strategies that have the dual purpose of promoting participation and cultivating lifelong learning attitudes. Despite all the research undertaken so far, there is still much to be learned about the balance and interplay between intrinsic and extrinsic motivational forces and how they collectively determine academic achievement in various educational settings.

This review, therefore, pursues a literature-based analytical exploration into the relationships between intrinsic and extrinsic motivation, and their combined impact on academic achievement. The review will synthesize findings from empirical and theoretical studies to identify patterns, theoretical insights, and implications relevant to educational practice and policy.

Research Problem

While many studies have focused on intrinsic and extrinsic motivation separately, fewer have critically examined the interplay-that is, how these two motivational forces interactively influence one another in students' academic engagement and achievement. This lack limits integrated motivational frameworks that can guide educators in designing balanced learning environments. The solution to this problem involves a consolidated review of the literature that links theory, evidence, and practice.

Objectives of the Study

Against the background and problem statement above, this review aims to:

- Review available literature on the relationships between intrinsic and extrinsic motivation regarding their effects on students' academic achievement.
- Identify the main psychological and educational factors that underlie intrinsic and extrinsic motivation in learning contexts.
- Examine how intrinsic and extrinsic motivation might interact to affect engagement, persistence, and learning outcomes.
- Identify theoretical perspectives that explain motivational interplay, including Self-Determination Theory, Expectancy-Value Theory, Flow Theory, and Social Cognitive Theory.
- Provide evidence-based recommendations for educators and policymakers to help design appropriate motivational strategies that serve to improve academic achievements.

Research Questions

- In light of the above objectives, this literature-based analytical review was guided by the following research questions:
- What are the roles of intrinsic and extrinsic motivation in determining academic achievement and student engagement?
- How do intrinsic and extrinsic motivational components interact in educational settings, and what is the resulting impact?
- What theoretical frameworks best explain the relationship between intrinsic and extrinsic motivation in learning?
- Which factors enhance and which weaken intrinsic and extrinsic motivation of students?
- How do educators balance intrinsic and extrinsic motivation to create sustainable success in academics?

Research Methodology

The study adapted an analytical review approach, informed by the PRISMA 2020 framework, in ensuring identification, selection, and analysis that is transparent, rigorous, and replaceable. It sought to critically synthesize the empirical and theoretical literature related to the interaction between intrinsic and extrinsic motivation in academic achievement. This research does not seek to conduct an exhaustive systematic review; instead, it adopts an analytical approach, incorporating principles of PRISMA to enhance clarity and methodological strength while focusing on depth of interpretation and thematic synthesis.

A structured and comprehensive search of the academic literature covering the period from the year 2000 to 2024 captured twenty years of theoretical and empirical developments in research into educational motivation. A systematic search was carried out in main databases: ERIC, Scopus, PsycINFO, Web of Science, and Google Scholar. Specific keyword combinations included "intrinsic motivation," "extrinsic motivation," "academic achievement," "student engagement," and "learning outcomes." Reference tracking and citation chaining were also conducted to extend the search beyond the sources retrieved through database searching alone. The search was further limited to include only peer-reviewed journal articles, books, and conference papers published in the English language to ensure the academic quality and relevance of the material reviewed.

The PRISMA recommendations were followed to identify the scope and maintain focus with regard to what was included and what was excluded. Studies were included if they a) investigated intrinsic and/or extrinsic motivation within educational settings, b) examined the relationship between motivation and academic achievement or engagement,

c) were based upon empirical or theoretical research, and d) had publication dates between 2000 and 2024. Studies were excluded if they were not peer-reviewed, did not clearly focus on education, were opinion pieces or editorials in nature, or lacked transparency in their methods. This structured inclusion–exclusion process helped to ensure that only the most relevant and credible studies informed the analysis.

The identification and selection of the study followed PRISMA's four-phase model in the following way: During the identification phase, a total of approximately 950 studies were retrieved from databases and supplementary sources. After screening, by removing duplicate records and those whose titles were clearly irrelevant, 520 studies remained. Then, an abstract-level review of relevance to intrinsic and extrinsic motivation was done, narrowing the selection to 124 full-text articles that met the preliminary criteria. The eligibility phase involved the full-text studies being scrutinized, and 66 were excluded due to methodological limitations, poor relevance, or lack of clarity. Finally, during the inclusion phase, a total of 58 studies were retained for detailed analysis and synthesis. By going through this PRISMA flow, the review was able to uphold transparency throughout and also reduced selection bias as much as possible.

Data were extracted systematically using a structured framework that captured information on, among other things, the authorship, publication year, country of the study, research design, types of motivation studied, theoretical framework, and findings regarding academic achievement. Thereafter, thematic synthesis analysis was performed on data from the included studies to identify recurring concepts, relationships, and emerging trends across the literature. Thematic patterns were then organized around major theoretical frameworks, including Self-Determination Theory (SDT), Expectancy-Value Theory (EVT), Flow Theory, and Social Cognitive Theory (SCT). This allowed for an integrative overview of how intrinsic and extrinsic motivation interact to shape academic performance, engagement, and persistence. Each study was evaluated for clarity of objectives, appropriateness of design, theoretical alignment, validity of measures, and transparency in reporting. Only those demonstrating moderate to high academic quality were retained in the final synthesis. This assurance of quality strengthened the credibility and validity of the analytical conclusions drawn from the review.

Although this study was based solely on secondary data and did not involve direct human participation, ethical standards were adhered to. Sources were appropriately acknowledged, and intellectual property rights were respected through proper citation and referencing in accordance with the APA 7th edition guidelines. In addition, due to the fact that no collection of primary data was conducted, there was no need for ethical approval. Although the present review has maintained the structure and principles of PRISMA, it remains a literature-based review and hence not a full-scale systematic review. Consequently, certain limitations are recognized, including publication bias associated with the exclusion of non-English studies and interpretive aspects of thematic

synthesis, which may introduce researcher subjectivity. Nevertheless, combining PRISMA-guided rigor with depth enhances the balance and transparency of the methodology in pursuit of the objectives of this study. In all, the PRISMA model provided a clear, systematic, and transparent process for both the identification and evaluation of scholarly works relative to intrinsic and extrinsic motivation. A combination of structured selection with critical interpretation allowed for an in-depth and credible synthesis of existing research into a nuanced understanding of how motivational dynamics drive students' academic achievement and engagement within and across diverse educational contexts.

Theoretical Framework of motivation

Theoretical frameworks of motivation explain why individuals engage in certain behaviours and how they sustain them. Intrinsic motivation, driven by internal satisfaction and pleasure, is vital for learning and fulfillment. Key theories like Self-Determination Theory (SDT) and Flow Theory emphasize autonomy, competence, relatedness, and balancing skill and challenge (Deterding & Cutting, 2023). Extrinsic motivation, driven by external rewards or avoiding punishment, is explained by Expectancy-Value Theory, which focuses on belief in success and the value of outcomes, and Social Cognitive Theory, which highlights observational learning and self-efficacy. These frameworks are crucial for creating effective teaching methods and learning environments that support both intrinsic and extrinsic motivation (Bandhu et al., 2024 Skinner et al.,2008).

Intrinsic motivation

Intrinsic motivation is the motivation to follow or change behavior for personal satisfaction or fulfillment, where engaging in an activity for the intrinsic satisfaction and happiness of the activity itself without the need for external rewards (Ryan & Deci, 2000). There are various characteristics of this intrinsic motivation. Individuals experience a genuine interest and enjoyment in the work, a sense of independence and choice in engaging with the activity, and motivation comes from an understanding of personal goals and values. Intrinsic motivation exerts a crucial influence on learning achievement, satisfaction, and learners' perceptions on performance expectations (Vansteenkiste et al., 2004). Thus, the student uses different motivational strategies based on his knowledge, skills and experience. Therefore, appropriate teaching methods, styles and learning environments that develop students' intrinsic motivation should be applied to make the learning process successful. Therefore, it is imperative that teachers ideally understand the factors that support each student's intrinsic motivation.

Self-Determination Theory

Self-determination theory (SDT) is a leading theory for understanding intrinsic motivation, which holds that individuals have three basic psychological needs (autonomy, competence, and relatedness). When those needs are satisfied, individuals contribute to the development and maintenance of intrinsic motivation. This theory examines how social contexts and individual differences facilitate different types of motivation (Ryan & Deci, 2017). Research shows that students consistently benefit when their learning needs are met for competence, relatedness, and autonomy under the scope of SDT (Averill & Major, 2020). Moreover, it tends to lead to academic success through greater self-study and understanding of strong interpersonal relationships (Bell, 2016). Students, on the other hand, are motivated to engage in activities more instinctively when their skills support their needs (Wolters, 2003).

Flow Theory

Flow is considered an optimal psychological state characterized by the enjoyment of being deeply absorbed in what one is doing and is automatic. Through it, people are motivated to engage in beneficial activities and get beneficial returns (Rheinberg & Engeser, 2018). This flow theory suggests that flow is achieved when a balance is struck between the individual's skill level and the level of challenge presented by the task. Another point is that some people are reluctant to perform a task when it is too easy, and may become stressed and miss the task when the task is too difficult. But through flow theory people become deeply immersed in activities, focused and intrinsically motivated. That is, through this theory, there is a greater possibility of increasing the educational skills of students (Piniel & Albert, 2019).

Extrinsic motivation

Extrinsic motivation is the drive to engage in a behavior or activity due to external factors or rewards rather than internal satisfaction or interest. It spans two main stages and involves seeking external incentives or avoiding punishment to motivate behavior. That is, extrinsic motivation (EM) is done to achieve a different outcome. For example, someone receiving an allowance will engage in some prescribed task (Legault, 2020). This extrinsic motivation has various characteristics, namely, external rewards or incentives that influence behavior, focus on achieving specific results or goals, dependence on external feedback or evaluation, and behavior that may stop once the external reward is removed (Bénabou & Tirole, 2003).

Expectancy-Value Theory

According to the expectancy-value theory proposed by Wigfield et al., (2009), motivation is influenced by two factors. These are expectancy (the belief that effort will lead to

successful performance) and value (the importance or importance a person places on the outcome or goal). In further understanding of this, it can also be described as the relationship between the student's expectation for success in a task and the achievement of that goal. Similarly, when students value active learning, they choose to engage deeply in active learning activities. On the other hand, according to this theory, individuals are more likely to be extrinsically motivated when they believe that their efforts will lead to desired outcomes and that those outcomes are valued (Eccles & Wigfield, 2020).

Social Cognitive Theory

Bandura's Social Cognitive Theory (1986) highlights the importance of observational learning and self-efficacy in motivation. It posits that individuals are motivated by observing others' results and by believing in their own abilities to succeed. Self-efficacy, closely related to intrinsic motivation, is the belief in one's capabilities (Bandura, 2014). Intrinsic motivation involves engaging in activities for their own satisfaction rather than for external rewards (Luszczynska & Schwarzer, 2015). People with high self-efficacy are more likely to be intrinsically motivated. Positive experiences and achievements further enhance self-efficacy and motivation. Additionally, observing others' rewards or punishments can induce extrinsic motivation to engage in similar behaviors (Schunk & DiBenedetto, 2020).

Factors affecting intrinsic motivation and their importance and implications for education

Often students change for various reasons and motivation plays a major role in the learning process. Among them, intrinsic motivation has a special place (Larson & Rusk, 2011). Intrinsic motivation refers to engaging in activities for their inherent satisfaction and enjoyment, rather than for external rewards. Understanding the factors that influence intrinsic motivation is crucial for enhancing educational practices and improving student outcomes. These factors include autonomy, competence, relatedness, challenge, interest and enjoyment, feedback and recognition, and goal setting (Auger & Woodman, 2016). Each factor plays a significant role in fostering a learning environment that supports deep engagement, persistence, and academic success. The table 1 below summarizes these factors, their importance, effects on education, and relevant academic references (Shroff & Keyes, 2017).

Table 01: *Factors affecting intrinsic motivation and their importance and implications for education*

Factor	Importance	Effects on Education	References
Autonomy	Sense of control and choice over one's actions.	Leads to increased engagement and motivation; students	Deci & Ryan (2000) Goldman et al.,

		take ownership of their learning.	2017 Kusurkar et al., 2011
Competence	Feeling capable and effective in one's activities.	Boosts self-efficacy and motivation; students are more likely to persist and tackle challenges.	Bandura , 2014 Deci et al., 1991 Ghanizadeh & Jahedizadeh, 2015
Relatedness	Feeling connected and valued by others.	Enhances intrinsic motivation; strong relationships lead to increased engagement and academic achievement.	Ryan & Deci (2000)
Challenge	Tasks that push beyond current abilities.	Promotes flow state; overcoming challenges builds confidence and resilience, leading to improved learning outcomes.	Rheinberg & Engeser, 2018 Sheehan & Katz, 2012 Csikszentmihalyi & Csikszentmihalyi, 2014 Shernoff et al., 2014
Interest and Enjoyment	Inherent interest and enjoyment in subjects or activities.	Leads to deeper engagement and better retention; interest-driven learning improves academic performance.	Oudeyer et al., 2016 Arnone et al., 2011 Renninger, 2000
Feedback and Recognition	Constructive feedback and recognition of progress.	Supports sense of competence; positive feedback fosters a motivating learning environment.	DePasque & Tricomi, 2015 Shin et al.,2018 Jovanovic & Matejevic, 2014
Goal Setting	Clear and achievable goals	Enhances motivation	Locke & Latham

	providing direction and purpose.	by giving purpose; students who set and pursue goals are more engaged in learning.	(2002)

These factors interact in complex ways and their influence may vary across individuals and contexts. Because of this, understanding these factors play an important role in the learning and teaching process and can contribute to creating environments that support and enhance intrinsic motivation.

Factors affecting extrinsic motivation and their importance and implications for education

Extrinsic motivation involves engaging in activities for external rewards or to avoid punishment, rather than for inherent satisfaction. Understanding the factors influencing extrinsic motivation is crucial for designing effective educational strategies (Rebitzer & Taylor, 2011). Key factors include the nature of rewards and punishments, goal orientation, and social influences (Rogti, 2021). Each factor plays a significant role in shaping students' motivation, impacting their academic performance and overall engagement. The following table 02 outlines these factors, their importance, implications for education, and relevant research findings.

Table 02: *Factors affecting extrinsic motivation and their importance and implications for education*

Factor	Importance	Implications for Education	References
Rewards and Punishments	Engaging in activities for external rewards or to avoid punishment.	Rewards and punishments influence student motivation; effectiveness varies with the type and timing of rewards and fairness of punishments.	Rebitzer & Taylor (2011); Rogti (2021)
Amount and Timing	The amount and timing of rewards can impact motivation.	Larger and immediate rewards may be more motivating; however, big rewards can have diminishing returns.	Grolnick (2002)
Fairness of Prizes	Perceived equality in rewards can affect	Motivation may decrease if students perceive rewards	Rogti (2021)

	motivation.	as unfair compared to peers or effort.	
Severity and Consistency of Punishments	Harsh and inconsistent punishments can reduce motivation, while mild and consistent ones are more effective.	Consistent and fair punishments can better manage behavior and motivation.	Rogti (2021)
Justice of Punishment	Fairness in administering punishments is crucial.	Unfair or arbitrary punishments can lead to reduced motivation.	Bartholomew et al. (2009)
Alternative Behaviour Options	Availability of alternative options can influence the effectiveness of punishment.	If attractive alternatives are available, the threat of punishment may be less effective.	Lepper (2015)
Goal Orientation and Achievement Motivation	External factors like family, teachers, and peers influence academic performance.	Clear, SMART goals and regular feedback can enhance motivation and academic performance.	Yahaya et al. (2010); Locke & Latham (2002); Hattie & Timperley (2007)
Social Influences	Peer pressure and teacher expectations can significantly affect motivation.	Integrating group activities, building self-confidence, and creating a supportive classroom culture can enhance motivation.	Wentzel & Watkins (2002); Jussim & Harber (2005); Butler (1987); Deci et al. (1999); Rimm-Kaufman & Hulleman (2015); Bandara & Jeewanthi (2022); Roorda et al. (2011); Martin & Dowson,2009

Measurement of Motivation: Methods and Approaches

Motivation, encompassing cognitive, emotional, and behavioral dimensions, is a multifaceted construct that can be challenging to measure comprehensively. To capture the complexity of motivation, researchers and educators employ a variety of methods, each offering unique insights into different aspects of motivation. These methods include self-report questionnaires, interviews, behavioral observations, physiological indicators, and environmental moment assessments.

1. Self-Report Questionnaires

Self-report questionnaires are widely used to assess motivation, providing valuable data on individuals' perceptions, beliefs, and attitudes towards their goals and learning processes. Key instruments include:

- **Achievement Goal Questionnaire (AGQ):** This tool evaluates students' mastery and performance goals, distinguishing between goal orientations that emphasize learning and improvement versus those focused on demonstrating ability compared to others (Elliot & McGregor, 2001). The AGQ helps identify the types of goals that drive students' behaviors and academic engagement.
- **Motivated Strategies for Learning Questionnaire (MSLQ):** This comprehensive instrument assesses students' motivational orientations and learning strategies, including intrinsic and extrinsic motivation, self-efficacy, and task value (Rotgans & Schmidt, 2010). The MSLQ provides insights into how students' motivation influences their use of learning strategies and overall academic performance.
- **Academic Motivation Scale (AMS):** Based on self-determination theory, the AMS measures both intrinsic and extrinsic motivation, providing a nuanced understanding of why students engage in academic activities. It evaluates motivation along a continuum from intrinsic enjoyment to extrinsic incentives (Alivernini & Lucidi, 2008). The AMS helps in understanding the motivational drivers behind students' academic behaviors and choices.

2. Interviews

Interviews offer in-depth qualitative data on motivational processes, allowing researchers to explore individuals' experiences, perceptions, and the reasons behind their motivation. Structured or semi-structured interviews can reveal how personal, contextual, and situational factors influence motivation, providing a richer understanding of motivational dynamics that cannot be captured through questionnaires alone (Kosovich et al., 2017).

3. Behavioral Observations

Behavioral observations involve systematically recording and analyzing individuals' actions and reactions in various contexts. This method provides objective data on how motivation manifests in behavior, such as engagement in tasks, persistence, and response to feedback. Observational data can complement self-report measures by offering direct evidence of motivational outcomes (Osteraker, 1999).

4. Physiological Indicators

Physiological indicators provide insights into the bodily responses associated with motivational states. Techniques include:

- **Heart Rate:** Changes in heart rate can indicate levels of arousal and engagement associated with motivational states.
- **Skin Conductance:** This measure reflects the level of physiological arousal, which can be linked to emotional and motivational responses.
- **Brain Imaging (fMRI):** Functional magnetic resonance imaging (fMRI) allows researchers to observe brain activity associated with different motivational states, offering a direct view of the neural processes underlying motivation (Taylor, 2004).

These physiological measures offer objective data that can be cross-referenced with subjective self-reports to create a comprehensive picture of motivation.

5. ***Environmental Moment Assessment (EMA)***

EMA involves real-time data collection on individuals' daily activities, affect, and social interactions. This method minimizes recall bias and maximizes ecological validity by capturing data in naturalistic settings. EMA provides insights into how motivation fluctuates throughout the day and in response to various environmental factors (Gius & Schlauch, 2021). By offering real-world context, EMA enhances our understanding of the dynamic nature of motivation and its practical implications for teaching and learning.

The measurement of motivation is a multifaceted endeavor requiring a combination of methods to capture its complexity. Self-report questionnaires, interviews, behavioral observations, physiological indicators, and environmental moment assessments each contribute valuable insights into motivational processes. By employing a diverse array of measurement approaches, educators and researchers can develop more effective strategies for fostering motivation and creating supportive learning environments.

The Impact of Intrinsic and Extrinsic Motivation on Academic Success: Short-Term and Long-Term Effects

Motivation plays a crucial role in academic success, influencing both short-term performance and long-term educational outcomes. Intrinsic motivation, driven by personal satisfaction and enjoyment, is positively correlated with academic success, promoting higher engagement, persistence, and creativity (Heemskerk & Malmberg, 2020). It contributes to sustained academic achievement and a lifelong commitment to learning (Bieg et al.,2011). In contrast, extransic motivation, which focuses on external rewards or avoiding punishments, can effectively enhance short-term performance but may undermine intrinsic motivation if overemphasized. Understanding the effects of both types of motivation is essential for developing balanced educational strategies that foster both immediate and enduring success. The table 03 provides a concise overview of these effects and references key studies that offer insights into the relationship between motivation and academic success.

Table 03: *The Impact of Intrinsic and Extrinsic Motivation on Academic Success: Short-Term and Long-Term Effects*

Motivation Type	Short-term Effects on Academic Success	Long-term Effects on Academic Success	References
Intrinsic Motivation	○ Increased engagement and persistence ○ Higher self-esteem and lower levels of depression and anxiety ○ Less prone to antisocial behavior ○ Higher academic performance, including better grades and test scores Personal relevance and value in studies	○ Sustained academic achievement over time ○ Lifelong learning and pursuit of academic goals ○ More likely to pursue higher education and achieve career success ○ Lays the foundation for a lifelong learning mindset	Tariq et al., 2011 Goodman et al., 2011 Froiland et al., 2012 Taylor et al., 2014
Extrinsic Motivation	○ Motivates students to complete tasks and achieve specific academic goals ○ Teachers use extrinsic rewards to encourage desired behaviors and boost immediate performance	○ Overreliance may decrease intrinsic motivation over time ○ Students may focus more on obtaining rewards than on learning for knowledge's sake ○ Potentially compromises depth of understanding and retention	Karlen et al., 2019 Harackiewicz et al., 2000

The Impact of Overemphasizing Extrinsic Motivation on Academic Engagement and Creativity

Overemphasis on extrinsic motivation can lead to a dependency on external rewards, where students may only engage in academic tasks for the sake of obtaining rewards rather than deriving inherent satisfaction from the learning process. Research suggests that an excessive focus on extrinsic rewards may undermine creativity and intrinsic interest in learning. When students are constantly rewarded for specific outcomes, they may become less willing to take risks, explore new ideas, or engage in activities that do not offer immediate rewards (Ryan & Deci, 2020; Hidi, 2000). External rewards may not always align with the diverse interests and motivations of individual students. What may be motivating for one student might not be effective for another. This lack of personalization in extrinsic motivation approaches can limit their effectiveness. The "over justification effect" is a phenomenon where providing external rewards for activities that individuals intrinsically enjoy can lead to a decrease in intrinsic motivation. This suggests that too much reliance on external rewards may inadvertently undermine students' natural interest in learning (Lepper et al.,2005; Vansteenkiste et al.,2006).

In summary, while extrinsic motivation can influence short-term academic outcomes and encourage specific behaviours, it comes with potential drawbacks and limitations. Overemphasis on external rewards may not contribute to sustained academic success and can even hinder intrinsic motivation in the long term. It is crucial to strike a balance between extrinsic and intrinsic motivational strategies for a more comprehensive approach to fostering academic achievement.

Interaction Between Intrinsic and Extrinsic Motivation

Intrinsic motivation arises from internal desires, while extrinsic motivation comes from external rewards. These two types of motivation can interact and influence overall motivation and satisfaction (Locke & Schattke, 2019). They can complement each other, enhancing performance, especially in educational settings. For instance, external rewards can boost students' intrinsic interest in learning activities, aligning extrinsic rewards with personal goals and values (Ryan & Deci, 2000).

Self-determination theory suggests that self-regulation, when aligned with personal values, is the most effective form of extrinsic motivation. Intrinsic motivation can drive students to engage in enjoyable tasks without needing external rewards (Amabile, 1993 Vansteenkiste et al., 2018). However, extrinsic rewards can help increase interest in less engaging subjects, potentially developing intrinsic motivation.

Individual differences play a crucial role, as some people are more driven by intrinsic factors, while others respond better to extrinsic rewards. Effective motivational strategies should consider these differences and foster a sense of autonomy, competence, and relatedness, key components of intrinsic motivation (Robinson et al., 2012). Care must be taken, as extrinsic rewards can sometimes undermine intrinsic motivation, especially if the rewards are removed (Alexandris et al., 2002).

In summary, balancing intrinsic and extrinsic motivation is essential for creating a supportive learning environment that helps students succeed and reach their goals.

Applications of Intrinsic and Extrinsic Motivation in Teaching-Learning Process

Motivation is a vital element in education, directly influencing students' engagement, effort, and academic success. Intrinsic motivation, driven by internal factors such as curiosity and the pleasure of learning, fosters deep and meaningful educational experiences (Ferrer-Caja & Weiss,2000). Conversely, extrinsic motivation, influenced by external rewards and recognition, can also play a significant role in shaping student behavior and performance. By understanding and applying both types of motivation effectively, educators can create a dynamic and supportive learning environment that meets diverse student needs. The table 04 below summarizes practical applications for enhancing both intrinsic and extrinsic motivation in the classroom. It highlights the importance of these strategies and references key studies that support their effectiveness

Table 04: *Applications of Intrinsic and Extrinsic Motivation in Teaching-Learning Process*

Aspect	Applications	Importance	References
Intrinsic Motivation	- Allow students to express their interests in activities.	- Enhances self-study skill development.	Deci & Ryan, 2000
	- Incorporate real-world experiences.	- Increases interest and understanding of subjects.	Ryan & Deci, 2000
	- Present challenging but achievable tasks. - Provide positive and constructive feedback.	- Creates a sense of mastery. - Boosts sense of competence.	Hattie & Timperley, 2007 Dweck, 2006
	- Encourage self-directed learning projects.	- Promotes long-term engagement and deep learning.	Hassandra et al., 2003

	- Foster a growth mindset by valuing effort and persistence.		
Extrinsic Motivation	- Strategic use of rewards. -Clearly communicate expectations and outcomes. - Incorporate game design elements. - Use praise and recognition. - Implement a token economy system. - Provide extrinsic incentives aligned with intrinsic goals.	- Reinforces desired behaviors. - Helps students understand task purpose. - Maintains active engagement. - Builds a sense of achievement and progress. - Bridges the gap to intrinsic motivation.	Deci et al., 1999 Brophy, 2004 Deterding et al., 2011 Cameron & Pierce, 1994
Motivating Learning Environment	- Create a positive and inclusive classroom. -Integrate technology for interactive learning. - Use diverse teaching methods. - Build positive relationships with students. - Design a flexible learning environment. -Implement cooperative learning strategies.	- Encourages student success. -Improves engagement and motivation. - Meets different learning styles. -Creates a supportive climate. -Fosters collaboration and social skills.	Emmer & Sabornie, 2015 Domagk et al., 2010 Larkin & Budny, 2005 Bandara & Jeewanthi, 2022 Roorda et al., 2011

Challenges and Future Directions

Current challenges in studying motivation and academic achievement

Because motivation is a multifaceted construct with intrinsic and extrinsic components, defining it, as well as identifying valid and reliable measures, is an ongoing challenge (Lepper et al., 2005). On the other hand, motivational factors may vary across different individuals, cultural, and contextual settings, making it difficult to generalize findings globally. Therefore, it is important to consider cultural nuances in understanding motivation (Chirkov et al., 2003). Motivation is not a static trait but a dynamic process influenced by various factors, and capturing this dynamic nature and fluctuations over time has been identified as a challenge in research (Waninge et al., 2014). Additionally, motivational factors often interact with each other, complicating the isolation and study of individual effects. Understanding the interplay between intrinsic and extrinsic motivation poses challenges as well (Adler & Chen, 2011).

Areas for Future Research and Exploration

Exploring the neural mechanisms underlying student motivation and academic achievement is crucial for enhancing learning and teaching processes. Neuroimaging techniques offer new research opportunities (Gregory & Kaufeldt, 2015). Investigating the impact of technology, such as educational apps and online platforms, on motivation and achievement is also important (Dunn & Kennedy, 2019). Longitudinal studies can track motivation and achievement over time, revealing developmental trajectories and their relation to academic success (Eccles & Wigfield, 2002).

Research on effective interventions and educational policies is critical for identifying evidence-based strategies (Hulleman & Cordray, 2009). Examining motivation's intersection with sociocultural factors and educational equity can address issues in the learning process (Martin & Parker, 2014). Investigating how intrinsic and extrinsic motivations influence achievement, and their interaction, is essential (Hidi & Renninger, 2006). Understanding cultural and contextual influences on motivation is also important.

Developing strategies to promote intrinsic motivation and minimize negative effects of extrinsic motivation is key. Effective practices include supporting autonomy, providing mastery-oriented feedback, and fostering a growth mindset (Deci & Ryan, 2000; Wigfield & Eccles, 2000). Examining teacher characteristics, such as teaching style and enthusiasm, can help nurture students' intrinsic motivation (Reeve, 2012). Finally, exploring how motivation varies across disciplines will provide insights into students' needs and learning experiences in different academic domains.

Conclusion

Motivation is a fundamental driver of academic success, deeply influencing student engagement, cognitive functions, persistence, and resilience. Intrinsic motivation, fueled by personal interest and satisfaction, is linked to deep learning, long-term engagement, and creativity. In contrast, extrinsic motivation, driven by external rewards and punishments, can have varied effects depending on implementation. While it can enhance immediate academic performance, over-reliance on extrinsic rewards may undermine intrinsic motivation, leading to a focus on rewards rather than genuine learning.

Theoretical frameworks such as Self-Determination Theory (SDT) and Flow Theory underscore the importance of autonomy, competence, and relatedness in fostering intrinsic motivation. Conversely, Expectancy-Value Theory and Social Cognitive Theory emphasize the role of external factors and self-efficacy in shaping extrinsic motivation. Recognizing these factors, educators can design balanced interventions that cater to the diverse needs of students. Research shows that intrinsic motivation is significantly impacted by autonomy, competence, relatedness, challenge, interest, feedback, and goal setting. Similarly, extrinsic motivation is influenced by rewards, punishments, goal orientation, and social influences. Effective measurement of motivation involves a mix of self-report questionnaires, interviews, behavioral observations, physiological indicators, and environmental moment assessments to provide a comprehensive understanding of motivational dynamics.

To foster both intrinsic and extrinsic motivation, educators should implement evidence-based strategies such as allowing students to express their interests, incorporating real-world experiences, presenting challenging tasks, fostering a growth mindset, using strategic rewards, and clearly communicating expectations. These strategies should be adaptable to individual differences, cultural contexts, and the dynamic nature of motivation, ensuring that extrinsic rewards complement rather than undermine intrinsic motivation. Future research should delve into the neural mechanisms, technological impacts, and cultural nuances of motivation to develop more effective interventions and policies. By fostering a supportive learning environment that balances intrinsic and extrinsic motivational strategies, educators can enhance both immediate academic performance and long-term educational outcomes, ultimately creating a more engaging and effective educational experience.

Recommendations

Encouraging student autonomy is crucial in fostering intrinsic motivation. Teachers should provide opportunities for students to make choices in their projects and

assignments, and implement self-directed learning opportunities. This empowers students to take control of their learning, enhancing their engagement and interest.

Fostering a growth mindset is another essential strategy. Emphasizing effort and improvement rather than just outcomes helps students understand that their abilities can develop with dedication and hard work. Providing constructive feedback that focuses on progress rather than innate ability further supports this mindset, encouraging students to persist through challenges.

Incorporating real-world experiences into lessons can significantly boost student motivation. Connecting classroom learning to real-life applications makes the content more relevant and engaging. Project-based learning, where students solve real-world problems, can also enhance their interest and commitment to their studies.

While extrinsic rewards can be effective, they should be used strategically. Aligning rewards with students' intrinsic goals ensures that external incentives complement rather than undermine intrinsic motivation. Over time, it is beneficial to gradually reduce reliance on extrinsic rewards to encourage students to find satisfaction in the learning process itself.

Creating a positive classroom environment is fundamental. Building supportive relationships with students and promoting cooperative learning and collaboration foster a sense of belonging and motivation. A positive, inclusive classroom climate encourages students to engage more fully with their learning.

Integrating technology and interactive learning tools can also enhance student motivation. Educational technology can make learning more engaging and interactive, while gamification elements like point systems and badges can add an element of fun and competition, increasing student participation and effort.

Providing mastery-oriented feedback focuses on strategies and effort rather than just correct answers. This type of feedback helps students understand how to improve and encourages a focus on learning and mastery. Using formative assessments allows for ongoing guidance and support, helping students stay on track and motivated.

Designing tasks that are challenging but achievable is important for maintaining student interest and promoting growth. Appropriately challenging tasks push students to stretch their abilities while ensuring that they have the support needed to succeed. Scaffolding and differentiated instruction can help tailor these challenges to individual student needs.

Encouraging goal setting and self-monitoring helps students take ownership of their learning. Assisting students in setting specific, achievable goals and teaching them self-

monitoring techniques, such as progress tracking, can enhance their motivation and accountability.

Finally, fostering a culture of lifelong learning is vital. Teachers can model enthusiasm for learning and encourage students to explore topics beyond the classroom. This instills a love for learning that extends beyond immediate academic goals, preparing students for continuous growth and development throughout their lives.

References

Adler, P. S., & Chen, C. X. (2011). Combining creativity and control: Understanding individual motivation in large-scale collaborative creativity. *Accounting, organizations and society*, 36(2), 63-85. doi: 10.1016/j.aos.2011.02.002

Alexandris, K., Tsorbatzoudis, C., & Grouios, G. (2002). Perceived constraints on recreational sport participation: Investigating their relationship with intrinsic motivation, extrinsic motivation and a motivation. *Journal of leisure research*, 34(3), 233-252. doi: 10.1080/00222216.2002.11949970

Alivernini, F., & Lucidi, F. (2008). The Academic Motivation Scale: A Validation Study. *Journal of Educational Psychology*, 100(2), 401-413.

Amabile, T. M. (1993). Motivational synergy: Toward new conceptualizations of intrinsic and extrinsic motivation in the workplace. *Human resource management review*, 3(3), 185-201. doi:10.1016/1053-4822(93)90012-S

Arnone, M. P., Small, R. V., Chauncey, S. A., & McKenna, H. P. (2011). Curiosity, interest and engagement in technology-pervasive learning environments: A new research agenda. *Educational Technology Research and Development*, 59, 181-198. doi:10.1007/s11423-011-9190-9

Auger, P., & Woodman, R. W. (2016). Creativity and intrinsic motivation: Exploring a complex relationship. *The journal of applied behavioral science*, 52(3), 342-366. doi:10.1177/0021886316656973

Averill, R. M., & Major, J. (2020). What motivates higher education educators to innovate? Exploring competence, autonomy, and relatedness–and connections

with wellbeing. *Educational Research*, 62(2), 146-161. doi:10.1080/00131881.2020.1755877

Bandara, K. M. N. T. K., & Jeewanthi, A. A. P. (2022) Exploring the Influence of Parameters of Teacher-Student Interaction on Science Learning. *SAARC Journal of Educational Research*, 15,1.

Bandhu, D., Mohan, M. M., Nittala, N. A. P., Jadhav, P., Bhadauria, A., & Saxena, K. K. (2024). Theories of motivation: A comprehensive analysis of human behavior drivers. *Acta Psychologica*, *244*, 104177.

Bandura, A. (2014). Social-cognitive theory. In *An introduction to theories of personality* (pp. 341-360). United Kingdom: Psychology Press.

Bartholomew, K. J., Ntoumanis, N., & Th∅ gersen-Ntoumani, C. (2009). A review of controlling motivational strategies from a self-determination theory perspective: Implications for sports coaches. *International review of sport and exercise psychology*, 2(2), 215-233. doi:10.1080/17509840903235330.

Bénabou, R., & Tirole, J. (2003). Intrinsic and extrinsic motivation. *The review of economic studies*, 70(3), 489-520. doi:10.1111/1467-937X.00253

Bieg, S., Backes, S., & Mittag, W. (2011). The role of intrinsic motivation for teaching, teachers' care and autonomy support in students' self-determined motivation. *Journal for educational research online*, 3(1), 122-140. doi:10.25656/01:4685

Brophy, J. (2004). *Motivating students to learn*. USA: Routledge.

Butler, R. (1987). Evaluative task-related and ego-involving attributes: Effects of different feedback conditions on motivational cognitions, interest, and performance. *Journal of Educational Psychology*, 79(4), 474-482. doi:10.1037/0022-0663.79.4.474

Cameron, J., & Pierce, W. D. (1994). Reinforcement, reward, and intrinsic motivation: A meta-analysis. *Review of Educational Research*, 64(3), 363-423. doi:10.3102/00346543064003363

Chirkov, V., Ryan, R. M., Kim, Y., & Kaplan, U. (2003). Differentiating autonomy from individualism and independence: A self-determination theory perspective on internalization of cultural orientations and well-being. *Journal of Personality and Social Psychology*, 84(1), 97–110. doi:10.1037/0022-3514.84.1.97

Csikszentmihalyi, M., & Csikszentmihalyi, M. (2014). Intrinsic motivation and effective teaching. *Applications of flow in human development and education: The collected works of Mihaly Csikszentmihalyi*, 173-187. New York City: Springer.

Deci, E. L., & Ryan, R. M. (2000). The "what" and "why" of goal pursuit: Self-determination in human needs and behavior. *Psychological Testing*, 11(4), 227-268. doi:10.1207/S15327965PLI1104_01

Deci, E. L., Koestner, R., & Ryan, R. M. (1999). A meta-analytic review of experiments examining the effects of extrinsic rewards on intrinsic motivation. *Psychological Bulletin*, 125(6), 627–668. doi:10.1037/0033-2909.125.6.627

Deci, E. L., Vallerand, R. J., Pelletier, L. G., & Ryan, R. M. (1991). Motivation and education: The self-determination perspective. *Educational psychologist*, 26(3-4), 325-346. doi:10.1080/00461520.1991.9653137

DePasque, S., & Tricomi, E. (2015). Effects of intrinsic motivation on feedback processing during learning. *NeuroImage*, 119, 175-186. doi: 10.1016/j.neuroimage.2015.06.046

Deterding, S., & Cutting, J. (2023). Objective difficulty-skill balance impacts perceived balance but not behaviour: A test of flow and self-determination theory predictions. *Proceedings of the ACM on Human-Computer Interaction*, *7*(CHI PLAY), 1179-1205.

Deterding, S., Dixon, D., Khaled, R., & Nacke, L. (2011). From game design elements to playfulness: defining "gamification". In *Proceedings of the 15th International Academic MindTrek Conference: Envisioning Future Media Environments* (pp. 9-15). doi:10.1145/2181037.2181040

Domagk, S., Schwartz, R. N., & Plass, J. L. (2010). Interactivity in multimedia learning: An integrated model. *Computers in Human Behavior*, 26(5), 1024-1033. doi: 10.1016/j.chb.2010.03.003

Duckworth, A. L., Peterson, C., Matthews, M. D., & Kelly, D. R. (2007). Grit: Perseverance and passion for long-term goals. *Journal of personality and social psychology*, 92(6), 1087.doi:10.1037/0022-3514.92.6.1087

Dunn, T. J., & Kennedy, M. (2019). Technology Enhanced Learning in higher education; motivations, engagement and academic achievement. *Computers & Education*, 137, 104-113. doi: 10.1016/j.compedu.2019.04.004

Eccles, J. S., & Wigfield, A. (2002). Motivational beliefs, values, and goals. *Annual Review of Psychology*, 53, 109–132. doi: 10.1146/annurev.psych.53.100901.135153

Eccles, J. S., & Wigfield, A. (2020). From expectancy-value theory to situated expectancy-value theory: A developmental, social cognitive, and sociocultural perspective on motivation. *Contemporary educational psychology*, 61.doi: 10.1016/j.cedpsych.2020.101859

Elliot, A. J., & McGregor, H. A. (2001). A 2 × 2 Achievement Goal Framework. *Journal of Personality and Social Psychology*, 80(3), 501-519.

Emmer, E. T., & Sabornie, E. J. (2015). *Classroom Management: A Synthesis of Research, Theory, and Practice*. USA: Routledge.

Ferrer-Caja, E., & Weiss, M. R. (2000). Predictors of intrinsic motivation among adolescent students in physical education. *Research quarterly for exercise and sport*, 71(3), 267-279. doi:10.1080/02701367.2000.10608907

Fredricks, J. A., Blumenfeld, P. C., & Paris, A. H. (2004). School engagement: Potential of the concept, state of the evidence. *Review of educational research,* 74(1), 59-109. doi:10.3102/00346543074001059

Froiland, J. M., Oros, E., Smith, L., & Hirchert, T. (2012). Intrinsic motivation to learn: The nexus between psychological health and academic success. *Contemporary School Psychology: Formerly" The California School Psychologist"*, 16, 91-100.

Ghanizadeh, A., & Jahedizadeh, S. (2015). An exploration of EFL learners' perceptions of classroom activities and their achievement goal orientations. *International Journal of Research Studies in Education*, 4(3), 33-45. doi: 10.5861/ijrse.2015.1032

Gius, B. K., & Schlauch, R. C. (2021). Approach and avoidance alcohol inclinations in heavy drinking college students: An ecological momentary assessment study. *Addictive behaviors*, 123, 107080. doi: 10.1016/j.addbeh.2021.107080

Goldman, Z. W., Goodboy, A. K., & Weber, K. (2017). College students' psychological needs and intrinsic motivation to learn: An examination of self-determination theory. *Communication Quarterly*, 65(2), 167-191. doi.org/10.1080/01463373.2016.1215338

Goodman, S., Jaffer, T., Keresztesi, M., Mamdani, F., Mokgatle, D., Musariri, M. & Schlechter, A. (2011). An investigation of the relationship between students' motivation and academic performance as mediated by effort. *South African Journal of Psychology*, 41(3), 373-385.

Gottfried, A. E. (2009). Commentary: The Role of Environment in Contextual and Social Influences on Motivation. *Handbook of motivation at school*, 463.

Gregory, G., & Kaufeldt, M. (2015). *The motivated brain: Improving student attention, engagement, and perseverance.* Alexandria, USA: ASCD.

Grolnick, W. S. (2002). *The psychology of parental control: How well-meant parenting backfires.* USA: Psychology Press.

Harackiewicz, J. M., Barron, K. E., Tauer, J. M., Carter, S. M., & Elliot, A. J. (2000). Short-term and long-term consequences of achievement goals: Predicting interest and performance over time. *Journal of educational psychology*, 92(2), 316. doi/10.1037/0022-0663.92.2.316

Hassandra, M., Goudas, M., & Chroni, S. (2003). Examining factors associated with intrinsic motivation in physical education: a qualitative approach. *Psychology of sport and exercise*, 4(3), 211-223. doi:10.1016/S1469-0292(02)00006-7

Hattie, J., & Timperley, H. (2007). Feedback power. *Educational Research Review*, 77(1), 81-112. doi:10.3102/003465430298487

Heemskerk, C. H. H. M., & Malmberg, L. (2020). Students' observed engagement in lessons, instructional activities, and learning experiences. *Frontline Learning Research*, 8(6). doi.org/10.14786/flr.v8i6.613

Hidi, S. (2000). An interest researcher's perspective: The effects of extrinsic and intrinsic factors on motivation. In *Intrinsic and extrinsic motivation* (pp. 309-339). United States: Academic Press. doi:10.1016/B978-012619070-0/50033-7

Hidi, S. E., & Renninger, K. A. (2019). Motivation and its Relation to Learning. *The Cambridge handbook of motivation and learning,* 1-11. doi:10.1017/9781316823279.002

Hidi, S., & Renninger, K. A. (2006). The four-phase model of interest development. *Educational psychologist*, 41(2), 111-127. doi:10.1207/s15326985ep4102_4

Hulleman, C. S., & Cordray, D. S. (2009). Moving from the lab to the field: The role of fidelity and achieved relative intervention strength. *Journal of Research on Educational Effectiveness*, 2(1), 88-110. doi:10.1080/19345740802539325

Jovanovic, D., & Matejevic, M. (2014). Relationship between rewards and intrinsic motivation for learning–researches review. *Procedia-Social and Behavioral Sciences*, 149, 456-460. doi: 10.1016/j.sbspro.2014.08.287

Jussim, L., & Harber, K. D. (2005). Teacher expectations and self-fulfilling prophecies: Known and unknown, resolved and unresolved controversies. *Personality and Social Psychology Review*, 9(2), 131-155. doi:10.1207/s15327957pspr0902_3

Karlen, Y., Suter, F., Hirt, C., & Merki, K. M. (2019). The role of implicit theories in students' grit, achievement goals, intrinsic and extrinsic motivation, and

achievement in the context of a long-term challenging task. *Learning and Individual Differences*, 74, 101757. doi: 10.1016/j.lindif.2019.101757

Kosovich, J. J., Hulleman, C. S., & Barron, K. E. (2017). Measuring motivation in educational settings: A Case for pragmatic measurement. To appear in K. A. Renninger and S. E. Hidi (Eds.), *The Cambridge Handbook on Motivation and Learning* (pp. 39-60). New York, NY: Routledge.

Kusurkar, R. A., Croiset, G., & Ten Cate, O. T. J. (2011). Twelve tips to stimulate intrinsic motivation in students through autonomy-supportive classroom teaching derived from self-determination theory. *Medical teacher*, 33(12), 978-982. doi:10.3109/0142159X.2011.599896

Larkin, T., & Budny, D. (2005, July). Learning styles in the classroom: approaches to enhance student motivation and learning. *In 2005 6th International Conference on Information Technology Based Higher Education and Training* (pp. F4D-1). IEEE. doi:10.1109/ITHET.2005.1560310

Larson, R. W., & Rusk, N. (2011). Intrinsic motivation and positive development. *Advances in child development and behavior*, 41, 89-130. doi:10.1016/B978-0-12-386492-5.00005-1

Legault, L. (2020). Intrinsic and extrinsic motivation. *Encyclopedia of personality and individual differences*, 2416-2419. doi:10.1007/978-3-319-28099-8_1139-1

Lepper, M. R. (2015). Intrinsic and extrinsic motivation in children: Detrimental effects of superfluous social controls. In *Aspects of the development of competence* (pp. 155-214). Psychology Press.

Lepper, M. R., Corpus, J. H., & Iyengar, S. S. (2005). Intrinsic and extrinsic motivational orientations in the classroom: Age differences and academic correlates. *Journal of educational psychology*, 97(2), 184. doi:10.1037/0022-0663.97.2.184

Locke, E. A., & Latham, G. P. (2002). Building a practically useful theory of goal setting and task motivation: A 35-year odyssey. *American Psychologist*, 57(9), 705-717. doi:10.1037/0003-066X.57.9.705

Locke, E. A., & Schattke, K. (2019). Intrinsic and extrinsic motivation: Time for expansion and clarification. *Motivation Science*, 5(4), 277. doi:10.1037/mot0000116

Luszczynska, A., & Schwarzer, R. (2015). Social cognitive theory. *Faculty of Health Science Publication*, 225-51.

Martin, A. J., & Dowson, M. (2009). Interpersonal relationships, motivation, engagement, and achievement: Yields for theory, current issues, and educational practice. *Review of educational research*, 79(1), 327-365. doi:10.3102/0034654308325583

Martin, A. J., & Parker, P. D. (2014). School motivation of boys and girls: Differences of degree, differences of kind, or both? *Australian Journal of Psychology*, 66(2), 73-80. doi:10.1080/00049530412331283363

Osteraker, M. C. (1999). Measuring motivation in a learning organization. *Journal of workplace Learning*, 11(2), 73-77. doi:10.1108/13665629910260798

Oudeyer, P. Y., Gottlieb, J., & Lopes, M. (2016). Intrinsic motivation, curiosity, and learning: Theory and applications in educational technologies. *Progress in brain research*, 229, 257-284. doi: 10.1016/bs.pbr.2016.05.005

Piniel, K., & Albert, Á. (2019). Motivation and flow. *The Palgrave handbook of motivation for language learning*, 579-597. doi:10.1007/978-3-030-28380-3_28

Pintrich, P. R., & Schunk, D. H. (2002). Motivation in education: *Theory, research, and applications* (2nd ed.). Prentice Hall.

Rebitzer, J. B., & Taylor, L. J. (2011). Extrinsic rewards and intrinsic motives: standard and behavioral approaches to agency and labor markets. In *Handbook of labor economics* (Vol. 4, pp. 701-772). Elsevier. doi:10.1016/S0169-7218(11)04114-1

Reeve, J. (2012). A self-determination theory perspective on student engagement. In *Handbook of research on student engagement* (pp. 149-172). Boston, MA: Springer US. doi:10.1007/978-1-4614-2018-7_7

Renninger, K. A. (2000). Individual interest and its implications for understanding intrinsic motivation. *In Intrinsic and extrinsic motivation* (pp. 373-404). United States: Academic Press. doi: 10.1016/B978-012619070-0/50035-0

Rheinberg, F., & Engeser, S. (2018). Intrinsic motivation and flow. *Motivation and action*, 579-622.

Rimm-Kaufman, S. E., & Hulleman, C. S. (2015). Social and emotional learning in elementary school settings: Identifying important mechanisms. *Handbook of Social and Emotional Learning: Research and Practice*, 3-26.

Robinson, L. J., Stevens, L. H., Threapleton, C. J., Vainiute, J., McAllister-Williams, R. H., & Gallagher, P. (2012). Effects of intrinsic and extrinsic motivation on attention and memory. *Acta psychologica*, 141(2), 243-249. doi: 10.1016/j.actpsy.2012.05.012

Rogti, M. (2021). Behaviorism as external stimuli: improving student extrinsic motivation through behavioral responses in algerian college education. *Global Journal of Human-Social Science*, 21(1), 29-41.

Roorda, D. L., Koomen, H. M., Spilt, J. L., & Oort, F. J. (2011). The impact of teacher-student relationships on students' school engagement and achievement: A meta-analytic approach. *Educational Research Review*, 81(4), 493-529.

Rotgans, J. I., & Schmidt, H. G. (2010). The motivated strategies for learning questionnaire: A measure for students' general motivational beliefs and learning strategies. *The Asia-Pacific Education Researcher*, 19(2), 357-369.

Ryan, R. M., & Deci, E. L. (2000). Intrinsic and extrinsic motivations: Classic definitions and new directions. *Contemporary educational psychology*, 25(1), 54-67. doi:10.1006/ceps.1999.1020

Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, 55(1), 68-78. doi:10.1037/0003-066X.55.1.68

Ryan, R. M., & Deci, E. L. (2017). *Self-determination theory: Basic psychological needs in motivation, development, and wellness*. Guilford Press.

Ryan, R. M., & Deci, E. L. (2020). Intrinsic and extrinsic motivation from a self-determination theory perspective: Definitions, theory, practices, and future directions. *Contemporary educational psychology*, 61,101860. doi: 10.1016/j.cedpsych.2020.101860

Schunk, D. H., & DiBenedetto, M. K. (2020). Motivation and social cognitive theory. *Contemporary educational psychology*, 60, 101832. doi: 10.1016/j.cedpsych.2019.101832

Sheehan, D. P., & Katz, L. (2012). The practical and theoretical implications of flow theory and intrinsic motivation in designing and implementing exergaming in the school environment. *Loading...*, 6(9).

Shernoff, D. J., Tonks, S. M., & Anderson, B. (2014). The impact of the learning environment on student engagement in high school classrooms. *Teachers College Record*, 116(13), 166-177. doi:10.1177/016146811411601315

Shin, J., Kim, M. S., Hwang, H., & Lee, B. Y. (2018). Effects of intrinsic motivation and informative feedback in service-learning on the development of college students' life purpose. *Journal of Moral Education*, 47(2), 159-174. doi:10.1080/03057240.2017.1419943

Shroff, R. H., & Keyes, C. J. (2017). A proposed framework to understand the intrinsic motivation factors on university students' behavioral intention to use a mobile application for learning. *Journal of Information Technology Education. Research,* 16, 143.

Skinner, E. A., Furrer, C., Marchand, G., & Kindermann, T. (2008). Engagement and disengagement in the classroom: Part of a larger motivational dynamic? *Journal of Educational Psychology*, 100(4), 765-781. doi:10.1037/a0012840

Tariq, S., Mahmood, S., & Mubeen, S. (2011). The relationship between intrinsic motivation and academic achievement of male and female students at university

level in Pakistan: A case study. *Journal of Education and Vocational Research*, 2(5), 154-161.

Taylor, G., Jungert, T., Mageau, G. A., Schattke, K., Dedic, H., Rosenfield, S., & Koestner, R. (2014). A self-determination theory approach to predicting school achievement over time: The unique role of intrinsic motivation. *Contemporary educational psychology*, 39(4), 342-358. doi: 10.1016/j.cedpsych.2014.08.002

Taylor, S. E. (2004). The Psychology of Human Motivation: Neural and Physiological Perspectives. *Journal of Experimental Psychology: General*, 133(3), 347-357.

Taylor, S. F., Welsh, R. C., Wager, T. D., Phan, K. L., Fitzgerald, K. D., & Gehring, W. J. (2004). A functional neuroimaging study of motivation and executive function. *Neuroimage*, 21(3), 1045-1054. doi: 10.1016/j.neuroimage.2003.10.032

Vansteenkiste, M., Aelterman, N., De Muynck, G. J., Haerens, L., Patall, E., & Reeve, J. (2018). Fostering personal meaning and self-relevance: A self-determination theory perspective on internalization. *The Journal of Experimental Education*, 86(1), 30-49. doi:10.1080/00220973.2017.1381067

Vansteenkiste, M., Lens, W., & Deci, E. L. (2006). Intrinsic versus extrinsic goal contents in self-determination theory: Another look at the quality of academic motivation. *Educational psychologist*, 41(1), 19-31. doi:10.1207/s15326985ep4101_4

Vansteenkiste, M., Simons, J., Lens, W., Sheldon, K. M., & Deci, E. L. (2004). Motivating learning, performance, and persistence: The synergistic effects of intrinsic goal contents and autonomy-supportive contexts. *Journal of personality and social psychology*, 87(2), 246. doi:10.1037/0022-3514.87.2.246

Waninge, F., Dörnyei, Z., & De Bot, K. (2014). Motivational dynamics in language learning: Change, stability, and context. *The Modern Language Journal*, 98(3), 704-723. https://doi.org/10.1111/modl.12118

Wentzel, K. R., & Watkins, D. E. (2002). Peer relationships and collaborative learning as contexts for academic enablers. *School Psychology Review*, 31(3), 366-377. doi: 10.1080/02796015.2002.12086161

Wigfield, A., & Eccles, J. S. (2000). Expectancy-value theory of achievement motivation. *Contemporary Educational Psychology*, 25(1), 68-81. doi:10.1006/ceps.1999.1015

Wigfield, A., Tonks, S., & Klauda, S. L. (2009). Expectancy-value theory. *Handbook of motivation at school*, 2, 55-74.

Wolters, C. A. (2003). Regulation of motivation: Evaluating an underemphasized aspect of self-regulated learning. *Educational psychologist*, 38(4), 189-205. doi:10.1207/S15326985EP3804_1

Yahaya, N., Yahaya, A., Ramli, J., Hashim, S., & Zakariya, Z. (2010). The effects of extrinsic motivational factors in learning among students in secondary school in Negeri Sembilan. *International Journal of Psychological Studies*, 2