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Eliciting classroom motivation : not a piece of cake

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Different perspectives on motivation. What mechanisms energize students' behaviour in the classroom[1]

Motivation is essential to education because it provides the energy and direction that students need to be successful in school. If all activities that students had to do in the classroom were interesting and fun, there would be no need to study motivation. Unfortunately, students have to do many tasks that they do not like to do, are not interested in, do not feel competent in, or have no purpose for. That implies that it is important that teachers are aware of how they can adapt the curriculum and the instructional practices in such a way that students feel capable to do the tasks and find the tasks meaningful, interesting, and purposeful. The other side of the coin is that students need to understand how their learning and motivation systems work and how they themselves can influence, control and manage the level and nature of their motivation. In this chapter, we discuss how different theories of motivation have contributed to our knowledge of how the motivation system works. After a brief description on the principal constructs that have been used in the main motivation theories, we present some recent attempts to integrate traditional motivation constructs into an integrated perspective on student engagement and learning in the classroom. We also discuss the principal assessment instruments that were used to measure motivation. In the final section of this chapter, we illustrate how major insights emanated from motivation theories can help teachers to create instructional opportunities for students to regulate their engagement and participation in the classroom.

Keywords: early motivation theories; socio-cognitive motivation theories; self-regulation theories; assessment of motivation; motivation interventions.

What is Motivation? Motivation comes from the Latin verb "movere" meaning to move. Psychologists have defined it in various ways. In the English Language Dictionary it is defined as follows: If you or your actions are motivated by something, especially an emotion, it causes you to behave in a particular way or provides the reason for your behaviour. For example, groups can be motivated by envy and the lust for power.

In fact motivation could best be considered as an inner energy source that pushes people toward desirable outcomes and away from undesirable outcomes. In other words, motivation is concerned with the fulfilment of one's needs,

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expectations, goals, desires and ambitions. People who have no goals and ambitions lack a sense of having to move in a particular direction. There are also situations in which a person has a rather abstract goal (e.g., John wants to be successful in life and earn a lot of money). Whether John will achieve his goal depends on whether he has knowledge on what it is that he wants to achieve and how he can proceed, whether he has the inner push to take initiative and start goal pursuit and the willpower to sustain his motivation and adapt his action plans when they prove to be inadequate.

2.1. Conceptualizations of motivation changed over time

Over the years, researchers evoked many constructs to explain the energy sources that drive human behaviour. Diverse conceptualizations of motivation gave rise to many different motivation theories. We have summarized the main motivation theories in Table 1 in the Appendix in order to give the reader an impression of the different types of explanations that researchers put forward to explain motivated action. Table 1 provides an overview of 36 different motivation mini-theories based on the categorization provided by Pintrich and Schunk (1996). We organized the table in such a way that the reader can quickly discover the name of the theory, the researchers who initiated it, the key constructs that make up the theory, and the dominant assessment instruments that researchers used to measure these constructs. We arranged the motivation theories along a time line in Figure 1 in order to give the reader an idea of the time when the respective motivation theories were initiated and of the time span that it took the theories to develop. As can be viewed from Figure 1, some of these theories have received continued research attention and might be further developed into the future. We certainly do not suggest that motivation theories that have been located farther to the right are more advanced or have replaced the theories that precede them on the time line. New motivation theories are not automatically better than older ones.

We will use Table 1 to discuss two main questions, namely ‘How has the conceptualization of motivation changed over time?’ and ‘How have the research methods to assess motivation changed over time from more general traits to domain-specific traits and later to situation-specific measures?’ We will also point to key constructs, which exceed single theories, and played an integrative role in the development of motivation.

Pintrich and Schunk (1996) stated that definitions of motivation are numerous and varied and that there is much disagreement over the precise nature of motivation. Deighton (1971, p. 408) equally stated that “there is no general agreement among psychologists on how ‘motivation’ and ‘motivational factors’ should be defined or theoretically analyzed”. In order to provide the reader with the necessary background knowledge to adopt their own definition of motivation, we have scrutinized the literature on motivation and divided the theories into five main categories or perspectives on motivation. These are: early motivation theories (e.g., Freud; Hull; Thorndike; Wundt), socio-cognitive motivation theories with a focus

on expectancy and value (e.g., Atkinson; Bandura; Eccles), with a focus on intrinsic motivation (e.g., Deci; Harter; Hidi; Ryan), and with a focus on goals (e.g., Elliot; Dweck, Nicholls). We have also included integrated perspectives on motivated behaviour (e.g., Boekaerts, Zimmerman) that are usually categorized as self-regulation theories.

In the following sections, we give examples of different conceptualizations of motivation from each category and some examples of how principles that emanated from these theories have been translated into the instructional context. We will also point to some similarities and differences between the different mini theories and highlight that the development of new theories was often a reaction to existing motivation theories. It is important to note that new motivation theories never actually replaced the older ones. Researchers prefer to hang on to their own motivation constructs, often re-labelling new constructs that had been introduced by rivalling motivation theories in order to make them fit into their own motivation theory. This attitude has resulted in the numerous related and sometimes overlapping motivation constructs.

2.1.1. Early motivation theories

As can be seen in Figure 1, early motivation theories started in 1884 and were replaced by socio-cognitive theories in the 1950s. A close look at the conceptualizations in Table 1 (see Appendix) informs the reader that early motivation theories used two main types of explanations, namely internal forces that push people to act in a certain way and environmental stimuli that pull them towards enticing objects, people and events. Adherents of the former conceptualization used *instincts*, basic biological *needs* and *drives* (such as hunger, thirst, sex, and shelter), emotional *arousal*, and *will* to explain motivated behaviour while proponents of the latter category used extrinsic *rewards* and *punishments* to explain why people feel energized to act in a certain way. An example of the former conceptualization is Wundt's (1920), who described motivation in terms of the will. He explained will as an individual's desire, want, or purpose and described the act of using the will as volition. In this conceptualization, the will is the dominant driving force and want, desire and purpose are used as an explanation for the energy provided.

Examples of the latter conceptualization are Thorndike's (1913), Pavlov's (1928), and Skinner's (1953) conditioning theories, which held the belief that research should only focus on overt behaviour. Conditioning theories view motivation as an association between specific stimuli and specific responses. More concretely, *reinforcement*, mainly reward, is considered to be the dominant energy source that elicits behaviour.

Lewin's (1935) field theory unified the two main explanations of motivation. He stated that behaviour is a function of person characteristics (e.g., motives) in interaction with the environment. In fact, Lewin's theory set the scene for later theories of motivation, which introduced cognitive constructs – or motivational

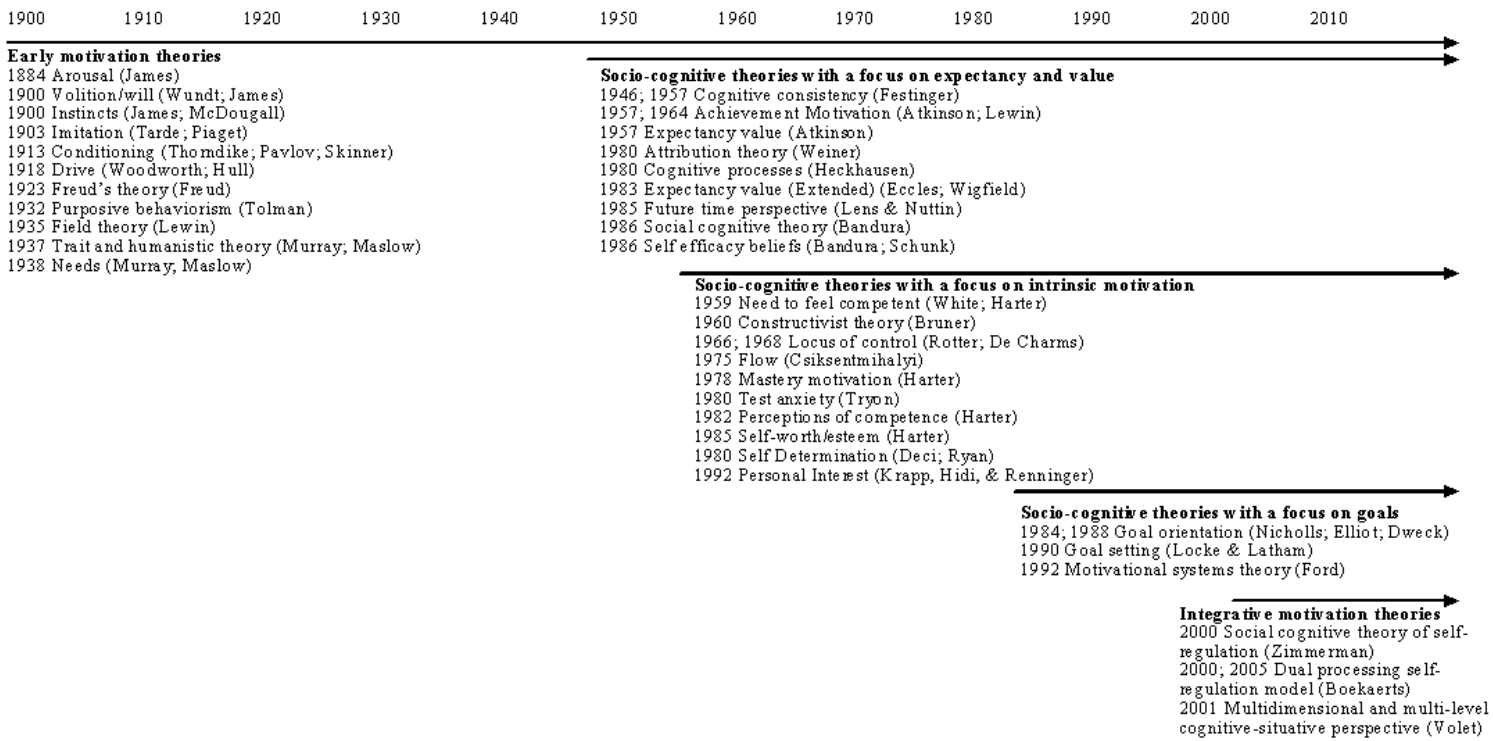

Figure 1. Time line of motivation theories

beliefs – as major motivational or energy sources. The shift to cognitive motivation theories was noted in the early 1950s.

2.1.1.1. Assessment

In the early days of motivation research, observations were the dominant form of assessment. Some observations were based on subjects' reactions to the Rorschach Inkblot Test, others on free associations, and introspections. Those approaches tended to favour open-ended, high inference procedures and devices. One influential method that was used by early motivation researchers is the Thematic Apperception Test (TAT: Murray, 1938). The TAT is a projective, narrative measure that analyses expressed needs and reactions to a series of ambiguous pictures. Murray developed this test before the Second World War and it dominated the field for a long time (see Appendix for Table 1). However, at some point in time this method was discredited because introspection and projective methods were considered un-scientific. Interestingly, projective techniques were re-invented later on.

2.1.2. Socio-cognitive theories

Early theories of motivation did not really examine learning as it occurs in the classroom. Studies mainly focused on explaining differences in performance that could be attributed to rather abstract motivational constructs. A shift in focus occurred when motivation researchers became interested in studying the link between motivational constructs and the cognitive processes that occur during the learning process. This cognitive shift can be seen in achievement motivation theories and intrinsic motivation theories. As can be seen in Figure 1, theories on intrinsic motivation developed largely in parallel to achievement motivation theories. These theories emerged in the same Zeitgeist, but we will discuss them separately since they developed independently and used slightly different explanatory constructs.

2.1.3. Socio-cognitive theories with a focus on expectancy and value

Table 1 reveals that many constructs used in the early motivation theories re-occurred in later theories, which show that these constructs had contemporary relevance. For example, *needs* (introduced by Lewin, 1935; and Murray, 1938) can be retrieved in Festinger's (1957) cognitive consistency theory. In Festinger's view, motivation results from relations between cognition and behaviour. When tension occurs, there is a need to make cognitions and behaviour consistent and this explains the individual's motivated actions. Tolman's (1932) *expectancy* construct is another motivation construct that was re-introduced in later motivation theories. For example, it is one of the main energy sources in Atkinson's (1964) expectancy-value theory. This motivation theory dominated the field for a long time. It is a social cognitive model of academic choice that includes a socialization component, focused on the role of culture, parents, and teachers in shaping achievement-related beliefs, as well as an identity development process (Perry, Turner, & Meyer, 2006).

Expectancy of subjective competence, combined with the perception of one's ability to perform an activity, is viewed as one component of the total energy source that determines whether a person will initiate a certain activity. The other component, which is traditionally considered as a moderator, is the *value* attached to achievement activities.

The task value component consists of the perceived importance of being good at an activity, the usefulness of the activity for obtaining short-term or long-term goals, the interest or liking of the activity, and the cost of engaging in the activity (Meece, Bower Glienke, & Burg, 2006; Perry, et al., 2006). In sum, motivation is defined as the product of "expectancy of success" and "value of success". Similar to the early motivation theories, motivation is considered as a rather general disposition of the individual. The individual's motivation is viewed as a personal characteristic that is relatively stable and transcends specific situations. As such, researchers considered it sufficient to gather information on students' expectation and value on a single occasion and draw conclusions about their motivation for academic tasks. We will come back to this issue in the assessment section where we will argue that this assumption implied that specific cognitions about the task at hand were largely ignored.

Another influential socio-cognitive motivation theory is Weiner's (1976, 1980) attribution theory. Weiner viewed motivation as the result of trying to understand and master the environment and oneself within it. Individuals seek to understand why things happen and why people say and do the things they do. Attribution theory assumes that people will use a variety of explanations to understand and explain their success and failure; they make inferences, or attributions, about what caused their actions. For example, a student may state after success on a difficult test that she was lucky to get the right questions (external, variable, not controllable attribution) whereas another student may comment that she did well because she had invested a great deal of effort (internal, variable, controllable attribution). The possibility to investigate students' attributions opened a window to set up interventions to train students to make strategy attributions instead of ability attributions.

Heckhausen (1977, 1980) extended Atkinson's expectancy-value model with the mechanisms described in attribution theory, thus setting the scene for the study of task-related cognitive processes in real time. He argued that in order to really understand why students do the things they do in the classroom, we need to study what they think before they start on achievement tasks (prospective cognitions that prepare for action) as well as their cognitions about success and failure after finishing achievement tasks (retrospective cognitions or attributions). He visualized these task-related cognitions as a cyclic process. Before achievement tasks students have a number of expectations, including situation-effect expectancies (e.g., When there is too much noise in the classroom, I will not be able to do the task well), action-effect expectancies (e.g., If I read the instructions carefully, I will be able to do the task well), and effect-consequence expectancies (e.g., I always feel elated when I succeed in solving all these problems before the

end of the test session). All these expectations converge and determine the students' mind-set in relation to achievement tasks.

Retrospective cognitions allow students to adjust their expectations. Students attribute their success or failure to specific causes, such as low or high ability, effort, luck, and task characteristics and strategy use. Heckhausen stressed the cyclic nature of the motivation process, highlighting that stored expectations and attributions - and their concomitant affect - will be activated and impact on similar achievement tasks in the future.

Bandura's (1982, 1986) social cognitive theory and his self-efficacy theory were two major contributions to the motivation literature, which prepared researchers for the shift in emphasis from studying motivation as a trait-like construct to investigating domain specific motivation processes. Self-efficacy was defined as the individual's capability judgment to organize and execute action plans that will lead to a good outcome on the task. Numerous studies (e.g., Bandura, 1993) documented that self-efficacy determines task choice and that students with high self-efficacy have higher aspirations and better performance. Accordingly, researchers agree that the fundamental trust in one's competence is an important mechanism that drives human action.

2.1.4. Socio-cognitive theories with a focus on intrinsic motivation

Theories on intrinsic motivation consider motivation, as the inherent *need* to feel competent and to interact effectively with the environment (White, 1959; Harter, 1978). In this respect, they are similar to the mini theories that we discussed in the previous section. Intrinsic motivation theories differ, however, in sense that they attach value to obtaining positive feelings of interest in the task, joy, and satisfaction. Granted, the value component of expectancy x value models also includes students' beliefs about the importance and utility of the task and their interest in the task, but interest is rather vaguely defined as the students' general liking of the task. Adherents of the intrinsic motivation perspective argued that students, who are intrinsically motivated, choose to do the task freely because they anticipate enjoyment while doing the task. During the activity they feel autonomous to continue or discontinue their actions. Bruner (1960) argued that students become motivated when instruction is in line with personal relevant experiences and contexts.

Self-determination theory (SDT) studied intrinsic motivation and used "psychological *needs*" as a key motivation construct. These psychological needs show quite some resemblance to the psychological needs put forward by Maslow (1954). However, SDT differentiates the content of goals or learning outcomes and the regulatory processes through which the outcomes are achieved, making predictions for different contents and for different processes. In SDT, three psychological needs (i.e. innate psychological nutriments that are essential for ongoing psychological growth, integrity, and well-being) are proposed, namely a need for competence, a need for social relatedness, and a need for autonomy. These psychological needs are considered essential for understanding the what (content)

and why (process) of goal pursuits (Deci & Ryan, 1985; Ryan & Deci, 2000). A vast body of studies based on SDT showed that when the three psychological needs are satisfied, students perceive the learning environment as optimal. By contrast, when students perceive the learning tasks as too tedious, too complex, and the environment as too controlling, their psychological needs will be frustrated and they may consider the learning environment as sub-optimal.

When students perceive that their psychological needs are fulfilled they report a feeling good state (Ryan & Deci, 2001; Boekaerts & Minnaert, 2003). In fact, SDT elaborated the mechanism of fundamental trust in one's competence - as already discussed with regard to Bandura's self-efficacy theory. This mechanism was extended with a second mechanism, namely the perception of a favourable learning environment. Ryan and Deci (2001) argued that finding oneself in a favourable learning environment drives human action, and when satisfied, results in well-being, or in other words in a feeling good state. Striving for a feeling good state is an important mechanism which may explain human action (Boekaerts, 2009b; Ford & Smith, 2007).

Another influential theory from the intrinsic motivation category is Csikszentmihalyi's flow theory (1975), which considers motivation as derived from either extrinsic rewards or intrinsic energy sources. Enjoying a task for its own sake taps an intrinsic energy source and may eventually result in flow, which is described as a holistic sensation experienced as a result of total involvement. Csikszentmihalyi emphasized that extrinsic motivation mainly results in material wellbeing whereas, flow results in higher subjective wellbeing, which may translate in happiness.

Susan Harter also worked within the intrinsic motivation perspective. She introduced different motivation constructs and gradually changed her definition of motivation from a stable personality trait to a domain specific inclination. Harter's (1978) mastery motivation theory still focused on motivation as a trait-like construct, but shifted to measuring motivation as domain-specific with the introduction of her self-perceptions of competence theory (Harter, 1982). Self-perception of competence refers to a self-evaluative judgment about one's ability to accomplish developmental tasks. Harter reported gender differences in the perception of competence. Males judge their physical appearance, their athletic performance, and their academic competence higher than females whereas females tend to judge their social skills higher than males. It is important that teachers, parents and educators realize that these self-evaluative judgements may be unrealistic and in need of repair.

Researchers working within interest theory (e.g., Krapp, Hidi, & Renninger, 1992), consider motivation either as a relatively stable trait (i.e., personal or individual interest) or as interacting with the task. They labelled the latter form of interest 'situational interest' to indicate that interest could also be triggered by features of the immediate environment. Interest researchers argued that personal interest is based on elaborate understanding of the content of a course or learning activity. Students need to have access to extensive and well-organized

content knowledge in order to develop a true personal interest in a domain. On the other hand, situational interest refers to the students' current enjoyment, attraction, and satisfaction. It is construed in the situation and can evaporate quickly as features of the environment change (e.g., when a fellow student comments negatively on one's attempts to describe a situation).

As mentioned previously, the constructs used by adherents of achievement motivation theory and proponents of intrinsic motivation theories developed in relative isolation. In the sixties and seventies, researchers considered these motivational perspectives as rivalling, despite the fact that many similarities could be observed. Over the years, motivation researchers from the two different perspectives exchanged ideas and, as a result, achievement goal theory emerged in the 1980s. This new motivation theory was an attempt to integrate the two conceptualizations that were dominant at the time. Nevertheless, achievement goal theory has never replaced the expectancy x value theory nor the intrinsic motivation theories. Today, the three motivational perspectives co-exist and researchers may ground their research in either one of these motivation theories.

2.1.5. Socio-cognitive theories with a focus on goals

Goal theorists viewed motivation as an integrated pattern of *beliefs* that lead to different ways of approaching, engaging in, and responding to achievement situations. Initially, two major kinds of motivationally relevant goal patterns or goal orientations emerged, namely ego-involved goals and task-involved goals (Nicholls, 1984). Later theorists re-named these perceived purposes or orientations to achievement situations as mastery and performance goals. A performance goal orientation refers to engagement in a learning task with the purpose of demonstrating one's ability. A mastery goal orientation denotes engagement with the purpose to increase one's competence, knowledge, and skills. Roughly speaking, performance orientation derived from the expectancy x value perspective and mastery orientation was mainly based on the intrinsic motivation perspective. The idea that performance goals have to be divided into performance approach (wanting to demonstrate high ability) and performance avoidance goals (wanting to hide incompetence) is a more recent development (Elliot & Church, 1997; Midgley et al., 1998).

Many researchers studied the links between mastery and performance goals and engagement and learning in the classroom. Results show a positive link between mastery approach goals and intrinsic motivation, and between performance approach goals and learning outcome. By contrast, a performance avoidance goal orientation is negatively linked with both learning outcome and intrinsic motivation. The effect of classroom context on goal orientation has also been studied. The results warrant the conclusion that different goal orientations may be positive for performance on some tasks, in some contexts, sometimes in the short and sometimes in the long run. Several researchers warned against classroom practices that stimulate a performance goal orientation. For example, Ames (1992) pointed out that instructional practices that emphasize evaluations, testing, and

competition may trigger a performance orientation in most students, which in turn trigger superficial learning, dependence on extrinsic motivation, and task avoidance.

The development of achievement goal theory was a first attempt to integrate theories from different motivational perspectives. However, researchers still focused on one type of goal, namely achievement goals and considered all other goals that students bring to the classroom as peripheral. Ford (1992) was the first to introduce a drastic shift. He presented an integrative motivation theory, which describes goals as a unifying construct of human functioning. Ford presented a taxonomy of multiple content goals and conceptualized the energy sources for motivated behaviour as a combination of *goals*, *emotions*, and personal agency *beliefs*. Motivational systems theory (MTS) describes how 24 content goals, which are considered important in students' life, interact. These goals are wanting to understand, to experience positive self-evaluation, to explore, to achieve intellectual creativity, to be entertained, to experience tranquillity, to feel happy, to experience bodily sensations, to experience physiological well-being, experience unity, transcendence, to belong, to feel socially responsible, to provide and receive social support, to experience equity, individuality, superiority, mastery, management, material gain, safety, and self-determination.

At present, not much is known about how these multiple content goals interact with each other in the classroom and how they gain dominance in the students' goal system. Wentzel's (e.g., 1996) influential work on the interaction between social goals and achievement goals is an exception. She found that students who pursue social and mastery goals in concert were more inclined to invest effort in their school work. She also showed that the pursuit of belongingness goals and entertainment goals in the classroom impede rather than support learning. By contrast, students who pursue mastery goals and social support goals were more inclined to invest effort in their school assignments. Wentzel also reported unique social goal patterns for high and low-achieving students.

Boekaerts (2009a) reviewed the literature on multiple content goals in the classroom and described how these goals affect students' engagement and disengagement patterns. For example, students who worked in effective teams were more aware of the goals they pursued in the classroom than students in the ineffective teams. In addition, they retrospectively explained their task engagement in terms of their salient goals. In line with what Wentzel found, these students gave preference to certificate goals alongside mastery, social responsibility, and social support goals. Students in ineffective teams also attached value to obtaining their certificate, but they also pursued entertainment goals and indicated that they wanted to do as little as possible (work avoidance goals). In contrast to the students who worked in effective team, these students pointed to unfavourable aspects of the learning setting to account for their low task engagement.

2.1.5.1. Assessment

Researchers working within the socio-cognitive perspective still viewed motivation as a stable disposition. In fact, achievement motivation researchers still used the TAT to measure motivation. As can be viewed from the Table, this state of affairs changed drastically at the end of the 1970s. Bernard Weiner (1976) introduced new assessment methods into the motivation field, such as stimulated recalls, think-alouds, and dialogues. Retrospective self-ratings, coding of verbal statements, and written material were also used as a convenient way to describe students' causal attributions of success and failure.

In the 1980's, the first results were accumulated with domain-specific questionnaires. Indeed, a few motivation researchers had accepted Mischel's (1973) reasoning that the general trait-approach did no longer fit current conceptualizations of motivation. Michel had argued that individuals do not behave as consistently as psychologists assume. He explained that cross-situational consistency should not be assumed, but that the individual's goal structure and his or her personal reward system in relation to a domain needed to be taken into account when investigating motivation.

Accordingly, motivation researchers started to examine students' motivation in relation to the different types of tasks that students have to perform in school. Boekaerts (1987) showed that students' motivation and their cognitive strategy use differed by subject-matter area. Harter (1982) developed her Perceived Competence Scale, which is a domain-specific, forced choice 4 point scale. Likewise, interest researchers (e.g., Krapp et al., 1992) made a distinction between individual interest and situational interest, used self-reports as well as observations, peer ratings, and self-ratings to assess students' interest. Eccles and her colleagues showed that students' task choice depended on their judgment of their capacity to perform those tasks and that motivation for doing math tasks was different from motivation to for other school subjects and for playing tennis (see Eccles & Wigfield, 2002).

These and similar findings urged motivation researchers to adopt a domain-specific approach to motivation. They no longer considered motivation as a stable disposition and used domain-specific self-reports to measure motivation (for a more detailed discussion, see Eccles & Wigfield, 2002). In other words, motivation research in education had shifted from a structure-oriented approach to a process oriented approach. Rather than measuring general traits and styles to describe the regularities in learning and motivation, motivation researchers were now ready to investigate the processes and strategies that students actually use every day in the classroom (for more details, see Boekaerts, 2002).

The shift from domain-specific to situation-specific measures occurred almost simultaneously. In the 1980's Bandura (1986) introduced task-specific rating on a 1-100 point scale indicating subjects' confidence in their ability to do a specific task. The on-line motivation questionnaire developed by Boekaerts in the early 80s was the first situation specific instrument that registered motivation in real time. It assesses students' appraisals of task characteristics (including

perceived task attraction, perceived difficulty level, success expectation) directly after the introduction of a task and immediately after completion of the task.

2.1.6. Integrative perspectives on motivated behaviour

During the past two decades - from the early 1990s onwards - the focus of some research groups has shifted from theories derived from one single perspective on motivation (e.g., expectancy x value models, intrinsic motivation models, and goal theories) towards more eclectic motivation theories. Next to research grounded in the formerly discussed motivation theories, new perspectives have been developed, focusing explicitly on the impact of motivation variables on the strategies that students use to steer and direct their learning in the classroom. From this perspective, motivation is conceptualized in terms of the decision-making and choice processes that students use with respect to the learning and self-regulation process. As such, these integrative theories are referred to as self-regulation theories.

Several integrative theories have been developed and are still being developed. In order to illustrate how these theories take account of the way that students engage in learning, we selected two integrative theories to illustrate this new approach, namely Zimmerman's (2000) social cognitive theory of self-regulation and motivation, and Boekaerts' dual processing self-regulation model (see Boekaerts & Niemivirta, 2000; Boekaerts & Corno, 2005; Boekaerts, 2006). Key motivation constructs in these theories are needs, expectations, values, self-efficacy, competence, volition, attributions and affect, in addition to various forms of strategy use (cognitive, meta-cognitive, motivation and volition strategies).

2.1.6.1. Zimmerman´s social cognitive theory of self-regulation

Research initiated by Zimmerman's social cognitive theory of self-regulation and motivation (2000) focused on learning processes in the classroom. Based on Bandura's (1986) social cognitive theory, Zimmerman described the interdependent roles of social, environmental, and self variables. He argued that these triadic processes are a key feature in behaviour. Zimmerman views motivation as part of self-regulation, which consists of three cyclic phases.

The first phase is labelled forethought. It involves processes like task analysis (including e.g., goal setting and strategy planning) and activation of motivational beliefs (e.g., self-efficacy and outcome expectations), which set the stage for action and precede commitment. The second phase is labelled the performance or volitional control phase. It concerns self-control (e.g., task strategies) and self-observation processes (e.g., self-recording), which in fact refer to the effort that underlies attention and action. The third phase is labelled self-reflection. It involves the students' response to an experience, including self-judgment (e.g., self-evaluation and causal attribution) and self-reaction (e.g., self-satisfaction, affect, and adaptive defence).

As we have discussed previously, students perceive the outcomes of their actions and make self-evaluative judgments. Self-evaluative reactions to

performance are important because students link their self-evaluations (e.g., an unsuccessful performance) to causal attributions (e.g., bad luck, low ability, task too difficult) and experience concomitant affect (anger, shame, sadness). Zimmerman emphasized that students may be inclined to avoid activities that produce negative affect, such as anxiety and anger. Zimmerman attests that the self-regulatory cycle is complete, when self-reflection affects forethought with regard to future actions and efforts, in the third phase.

Taken to the classroom, this theory predicts that students will benefit if the teacher encourages them to define the goals (and sub-goals) they will strive for - in advance - as well as the standards they will be using for the monitoring process. Furthermore, teachers need to model action plans and scaffold the development of these action plans, boosting the students' self-efficacy at the same time. Zimmerman and Kitsantas (2002) found that students need to observe models perform a new skill and that it is better to observe a coping model (i.e., a teacher or advanced peer who demonstrates the action plan while revealing how to tackle obstacles at the same time) than an expert model, who demonstrates a flawless performance.

2.1.6.2. Boekaerts´ dual processing self-regulation model

In this model (for a more detailed description see Boekaerts, 2006) motivation is considered as a key aspect of self-regulation. Before we describe this model in more detail, we would like to point out that Boekaerts made a distinction between motivational *beliefs* that refer to the cognitions that students bring to bear on a task or learning activity (i.e., the value they attach to the task, the expectancies they have about success and failure on the tasks, their goal orientation, and the attributions they make in relation to this type of task) and the motivation and *volitional* strategies that they have access to and actually use to boost and sustain their motivation and to regulate *affect*.

In line with Gollwitzer (1999), Boekaerts differentiated between the motivation regulation strategies that students use in the goal setting stage to make the learning activity meaningful and purposeful (e.g., enhancing self-efficacy, increasing interest in the task) and the volitional strategies that they use in the goal striving stage to sustain their motivation (environmental control, dealing with distractions, regulating emotions). In the goal-setting stage, students transform the activated motivational beliefs into an intention to act. This does or does not result in commitment to the learning goal. In the goal-striving stage, the focus is on the best way to implement the goal. At this point the necessary learning and meta-cognitive strategies are set in motion and the students need to sustain their motivation and protect it from competing action tendencies.

Corno (1993) described good academic work habits that contribute to effortful performance, and Wolters (in press) described the motivation regulation strategies that students use to increase, sustain, and modify the level of their motivation. Examples are: interest enhancement, social reinforcement, task restructuring, self-consequating, raising self-efficacy, and dealing with distracters.

The dual processing self-regulation model describes two *goal* priorities that students strive for in the context of the classroom, namely achieving gains in one's resources (e.g., extend one's domain-specific knowledge base, improve strategy use, and increase competence) and keeping one's well-being within reasonable bounds (e.g., feeling safe, secure, happy, satisfied). It is assumed that students try to achieve a balance between these two goal priorities.

Students who are invited to participate in a learning activity use three sources of information to form a mental representation of the task-in-context, and to appraise it, namely (1) current perceptions of the task and the physical, social, and instructional context within which it is embedded, (2) activated domain-specific knowledge and strategies related to the task, and (3) motivational beliefs in relation to the task (e.g., domain-specific efficacy, outcome expectations, interest, goal orientation, attributions). This information is brought into working memory and forms the basis for determining goal commitment in the goal setting stage and selecting relevant strategies during the goal striving stage.

Based on the knowledge present in working memory, students make decisions about the targets, focus, expectancies, and type of engagement that they will commit themselves to. They will feel committed to the task, when they experience dominantly favourable *cognitions* and *emotions*. This means that they were successful in bringing the learning task in line with the core guiding principles of their own goal system (interests, needs, expectancies). At such a point, the students' learning intention is firmly in place and they engage actively in the learning process

However, many obstacles might occur en-route to the learning goal. Students need access to specific self-regulation strategies to overcome these obstacles, because they will feel the urge to redirect their attention, when they detect cues that signal a threat to well-being. In such instances, they are involved in well-being rather than learning and they may ask themselves: "Will others laugh when I say this?" or "Will this be taken as proof that I am not as smart as I pretend?" These unfavourable appraisals prompt students to explore the threat further and to steer and direct the flow of energy away from the task. In order to continue the learning process in the face of obstacles, students need access to volitional strategies that protect their learning intention from these competing action tendencies.

In this section, we have illustrated that integrative theories of motivation and learning have described the motivation regulation mechanisms that students need to acquire in order to be able to increase, sustain, and modify their own level of motivation. At this point in the discussion, we would like to mention that the cognitive shift in the conceptualization of motivation was paralleled by a shift in research methods to assess motivation. In the next section, we will address the second question that we phrased in the introduction, namely 'How have the assessment methods changed over time from measuring relatively stable dispositions, or traits, to domain-specific and situation-specific registration of

learning intentions and goal striving?' We will again refer to Table 1 in Appendix A to describe the shift in research methods to assess motivation.

2.2. How did assessment methods change over time?

Boekaerts and Corno (2005) gave a description of the different assessment instruments that have been used to measure engagement and strategy use, including motivation strategies. The list consists of direct observations measuring the choice of tasks, effort, and persistence; ratings by teachers, parents, and peers, judging a student's level of motivation; self-reports and questionnaires using Likert items; oral interviews after finishing a task; stimulated recalls (e.g., asking a student to watch a video recording of a math lesson and asking her to explain why she did not engage in the task as was expected by the teacher); think-alouds; dialogues recalling or verbalizing one's thoughts, actions, and feelings during the task; online methods that inspect the traces that students leave behind when they make an electronic assignment (e.g., the number of times they attempted revising a written text).

In the last column of Table 1, we described the most dominant assessment methods used by each research group, based on information provided in the original research reports and in review studies. Inspection of the Table will inform the reader that before the cognitive shift in motivation theories, researchers measured the rather abstract motivation constructs mainly using observations, self-ratings, introspections and projective measures. With the emphasis on motivational beliefs came a heavier reliance on self-reports, think-alouds, and retrospective interviews. At the end of the 1980s, most motivation questionnaires were administered at one point in time, requesting respondents to give an indication of their commitment to school work. At that time, many researchers still regarded personality variables, including motivation variables, as relatively stable personality characteristics that could be generalized to a wide range of school situations.

This prevalent view was attacked in the second half of the 1970s but it took a while before motivation researchers accepted the new ideas and developed new measures to assess the *process aspects* of motivation. For a long time, the advantages of motivation research in the actual classroom - compared to laboratory settings – had been underestimated in educational research. The use of domain-specific and situation-specific motivation measures set the scene for the study of students' engagement in the classroom and brought motivation research closer to the study of learning and instruction processes. Nowadays, an increasing number of motivation researchers conduct research in the complexity of the classroom, taking adequate account of the social context (e.g., Järvelä & Volet, 2004; Walker, Pressick-Kilborn, Arnold, & Sainsbury, 2004).

The use of situation-specific assessment methods allowed researchers to develop process-oriented motivation theories. An example is Boekaerts' (2006) dual processing self-regulation model. This theory shows that appraisal of a

learning opportunity, in situ, is needed to take full account of the specific environmental conditions, including the exact content of a task, the local context, and rivalling goals at that specific moment in time, as well as students' perceptions of these conditions, their activated motivational beliefs, and their strategy use.

Boekaerts (2002) explained that activated domain-specific motivational beliefs and the domain-specific commitment pathways based on these beliefs provide the context within which students appraise a current learning situation. Recent software developments and the availability of computers in classrooms, make it possible to register students' appraisals of the task and its context on-line. For example, the "Between the lines" methodology that Mary Ainley and her colleagues developed (Ainley & Patrick, 2006) and the on-line self-regulation methodology that Boekaerts, Cascallar, and Rozendaal (2008) developed are examples of advanced techniques to analyze students' strategy use in interaction with their motivational beliefs. These researchers developed an interactive software program that aims to establish more understanding of learning processes while students are working on specific learning activities.

Single items measure students' thoughts and feelings during a specific task, thus assessing their expectations, self-efficacy, interests, goal-orientation, attribution processes and concomitant affect on-line, as well as collecting exemplars of their strategy use (meta-cognitive and meta-motivational strategies) and learning outcomes. This detailed, on-line monitoring of students' cognitions, feelings, and actions contributes to our understanding of how motivation principles actually work in the classroom. Computerized instruction, combined with another recent development, namely the availability of advanced statistical software packages, such as neural network analyses, provide the opportunity to assess and analyze numerous different variables concurrently and explore the underlying mechanisms of motivated behaviour.

2.3. Effective instruction creates instructional opportunities

In accordance with the motivation theories that we discussed in section 2, researchers have formulated guidelines for teachers to create better instructional opportunities for their students (see e.g., Boekaerts, 2002). While discussing the various motivation theories, we occasionally referred to studies that provided evidence that students' engagement and involvement in learning could be boosted by changing specific aspects of the motivation process. We will not repeat here the many findings with implications for the classroom that we have already discussed in the text. Instead we will refer to a few findings that have proved to be effective to improve students' motivation and that are easy to incorporate in normal classroom contexts.

In the remainder of this chapter, we will refer to research findings that teachers can use in their classroom (1) to boost their students' motivation and (2) to improve their strategy use, specifically motivation regulation strategies.

2.3.1. Teachers can boost their students' motivation

Brophy (2001) summarized the research on a supportive classroom climate and reported that teachers need to display personal attributes that will make them effective role models: they need to be cheerful, friendly, warm, emotionally stable, sincere, and caring about students as individuals and as learners. Effective teachers convey a sense of the purposefulness of the learning tasks so that students can attach value to the learning activities and establish a mastery goal orientation. Teachers should be clear and consistent in articulating their expectations at the beginning of new learning activities. Teacher expectations concerning what students are capable of accomplishing alone or with the help of the teacher (peers) tend to shape what students come to expect from themselves. Hence, teacher expectations should be communicated to the students and they should be as positive as possible, yet realistic. Teachers should keep their expectations of their students current by monitoring their progress closely.

A study by Leach and Tan (1996) showed that it might be beneficial if teachers communicate with parents about their expectations for their children. These researchers found that it is constructive for the conduct of students in class that teachers inform parents regularly on their child's classroom behaviour. Leach and Tan showed that on-task class behaviour increased when parents' received a letter with negative feedback on their child's classroom behaviour. This effect was also demonstrated, when only a few parents received this feedback on their child's classroom behaviour. It stands to reason that parents will express their expectation to their children more clearly when they receive such a letter from the teacher.

Boekaerts (2009b) described different instructional practices that teachers can use to boost motivation in the classroom. We will refer to four specific practices, namely providing adequate feedback, attributing performance to strategy use, giving praise, and providing motivational information up front.

2.3.1.1. Providing adequate feedback

A much quoted finding is that teachers can boost students' motivation by providing adequate feedback. Dweck (1999) argued that teachers should avoid person-oriented criticism, for instance by praising a student's intelligence in order to encourage a mastery orientation. Instead, teachers should emphasise that effort invested in a task can make all the difference and that selecting a specific strategy to do the job may prove to be effective or ineffective. When students fail on a task, they should change their strategy use rather than complain that they cannot do the task, because they lack the ability to do so. Dweck recommended teachers to comment on students' work with comments such as 'I really appreciate that you worked that hard', and 'The strategy you used here was really effective'. They should avoid comments like "You are always making the same mistakes", or "Look, at your team mate, she did a much better job than you did". Instead, teachers should play down a failure experience with comments like 'Next time you could put more effort in this task', and 'Could you think of another way to do this next time?'

2.3.1.2. Attributing performance to effort and strategy use

Teachers should not encourage students to attribute a successful performance to external, non-controllable causes, such as difficulty level of the task, luck, and unexpected help or favors from others. Rather, they should teach their students to attribute achievements to sufficient competence to do the task and reasonable effort. This will guarantee that they will be confident to use the skill on a later occasion. Teachers should be careful that their students do not attribute a poor performance to low ability. It is better that they view low effort, insufficient prior knowledge, or using the wrong strategy as the cause for failure. Such failure attributions will prompt students to invest more effort, to fill up the knowledge gap, and to acquire better strategies.

2.3.1.3. Giving praise

Researchers like Beaman and Wheldall (2000) pointed out that teachers respond more frequently to inappropriate social behaviour than to appropriate behaviour that they might want to increase with praise. A meta-analysis by Cameron and Pierce (1994) showed that expected tangible rewards decrease intrinsic motivation (e.g., getting stars from the teacher for a good performance or a present from one's parents for a good result), whereas verbal rewards such as praise and positive feedback produce an increase in intrinsic motivation, positive attitude toward the learning activity, and approach behavior. An impressive number of studies documented the hidden costs of extrinsic rewards. For example, Lepper and Gilovich (1981) showed that providing extrinsic reward for something that the person would have done anyway may have a detrimental effect on the creativity and quality of performance and on the effort invested later on in similar activities.

Brophy (1981) added that praise given publicly for trivial things could be interpreted unfavorably by the students (e.g., praise for handing in an assignment before the deadline, or for doing exactly what the teacher asked class to do). Brophy concluded that effective praise includes appreciation for non-trivial engagement and provides informative feedback. It should be perceived by the students as sincere, contingent on performance of the behavior to be reinforced, and specific about the particulars of the behaviour being reinforced. He emphasized that it depends on the student whether praise is effective. Teachers should therefore observe a student's reaction to praise and react accordingly.

2.3.1.4. Providing motivational information up front

A very promising new technique to boost students' motivation is to influence their motivational beliefs and perceptions by providing motivational information up front. Vansteenkiste, Simons, Lens, Sheldon, and Deci,. (2004) showed that telling students before they had to read a text that the information in the text would help them educate their own children, resulted in deeper processing, increased autonomous motivation, higher persistence, and better test performance. It seems that information about the functional relevance of a course or learning activity

helps students to activate favourable motivational beliefs that promote more efficient strategy use.

2.3.2. Improving students' strategy use

We argued that students need to be able to regulate their motivation and we mentioned a few motivation regulation strategies. Teachers should model these strategies (e.g., affect regulation, effort regulation, and effective time management). Randi and Corno (2000) described how strategy instruction can be incorporated in effective teaching. They argued that new visions of teaching and learning place new demands on teachers to change not only what but also how their subject matter content is taught.

Boekaerts (2006) described volitional strategies as aspects of self-management. These strategies refer to students' persistence to maintain focused on the task and invest further effort, despite potential distractions. For example, many students experience difficulty to get started on a learning task, particularly when there are many distracters present in the learning environment. They also find it difficult to persist when they are side tracked by rivalling goals, such as going on the Internet, or answering an incoming e-mail or SMS. Boekaerts and Corno (2005) argued that these students need strategy training in the use of good work habits that protect their intentions. Corno (2004) described how teachers can help their students to set concrete learning goals and subgoals, to prioritise these goals, to organise their work effectively, to make a time schedule, to stick to that schedule and monitor the time (time management).

It is not enough to explain to students which strategies are effective. Teachers should model these strategies, drawing their students' attention to the motivation regulation strategies that some students already use and that they might adopt themselves. It is important that teachers scaffold this adoption process. Analogous to the zone of proximal development in learning, a motivational zone of proximal development should be created. Students are then encouraged to practice those motivation regulation strategies that they find too cumbersome to use on their own. Instructional practices, including teacher and peer support should increase their commitment and their resolve to use these motivation regulation strategies while doing independent seatwork or homework.

Zimmerman and Kitsantas (2002) showed that strategy teaching is most effective when it includes cognitive modeling, which makes thought processes that guide strategy use observable. Students benefit most from observing a teacher (or a more advanced peer) demonstrate a skill, when they draw explicit attention to possible roadblocks during skill execution and advise on the use of strategies to deal with these obstacles.

McCaslin and Hickey (2001) described instructional contexts of supportive relationships, co-regulation, scaffolding, and affording instructional opportunities. In these contexts, the motivational beliefs (efficacy, outcome expectations, value attribution, and goal orientation) that lead to commitment are socially constructed and supported. Järvelä and Järvenoja (in press) showed that students working

collaboratively on a joint project use communal motivation regulation strategies, which are co-constructed during the task.

2.4. General conclusion and issues for future research

The reader will have noted that it is difficult to penetrate the numerous motivation theories due to the large amount of constructs and conceptualizations of motivation. Therefore, we tried to provide an overview of the most prominent motivation theories, pointing to similarities and differences between the different motivation theories. We addressed three main questions, namely 'How has the conceptualization of motivation changed over time?', 'How have the methods of assessment changed over time from general traits to domain-specific and situation-specific measures?' and 'How can insights from motivation theories help the teacher to create more optimal learning opportunities?'

We addressed the first question by having a closer look at the different motivation theories. This analysis revealed that motivation researchers evoked a great number of constructs to describe the energy sources that make individuals move forward (e.g., instincts, needs, drives, will, expectancies, perceived competence, fear of failure, self-efficacy, personal interest, desire, flow). Most of these constructs are abstract in the sense that it is difficult to explain to students and teachers what they can do to make actual use of, for example, their instincts, needs, and flow. As we have seen, one source of complexity is that some of these constructs overlap and have been given different labels. This hinders the comparison of research results.

In order to gain more insight into the push and pull function that different motivation constructs serve, we need to describe them in terms of the underlying mechanisms that provide their energy source. In line with Boekaerts (2009b), we view the presence of a feeling good state, associated with a fundamental trust in one's competence, perception of a favourable learning environment (e.g., autonomy, relatedness, support, and fairness), and the successful pursuit of one's personal goals, as the main energy sources that move people forward.

Each of these mechanisms is linked to specific motivation theories. For example, a fundamental trust in one's competence can be retrieved in self-efficacy theory, expectancy x value theory, and self-determination theory and empirical results emanating from these different theories inform us that this mechanism acts as an internal resource and favourably affects the learning process. In an optimal learning environment the different push and pull mechanisms abound, inviting the learner to engage in meaningful learning. We should note, however, that a learning environment is never optimal for all students, meaning that students do not all feel fully energized in a specific learning environment. For this reason, it is important that researchers are able to detect how the different pull and push mechanisms work in practice. This will allow them to explain to teachers how different learning environments may facilitate or inhibit learning for specific types of students.

We answered the second question by describing the different assessment methods that were used in motivation research. Observations, introspections, and projective techniques were the dominant assessment tools used in the early motivation studies. A change in Zeitgeist accompanied by more advanced assessment techniques caused a cognitive shift in motivation research paralleled by a shift from measuring motivation as a general trait towards domain-specific and situation-specific measures. Clearly, the development and use of self-reports has dominated motivation research for a long time. To-day, self-reports are still the most common assessment methods of the motivation construct. However, self-reports have been questioned (see e.g., Karabenick et al., 2007), because a discrepancy was noted between the assumptions made by the researchers about the meaning communicated to the students and respondents' interpretation of the self-report items. What we have learned from the history of motivation is that assessment methods may fall into disuse at times but are sometimes 'reinvented'. Projective assessment methods that were popular with early motivation researchers are now regaining their status as a measuring device. This illustrates the cyclic nature of the assessment process in motivation research.

The third question that we raised was: How can insights from motivation theories help the teacher to create more optimal learning opportunities? We mentioned several interventions that teachers could use in their classroom to boost their students' motivation. We also argued that effective teachers should incorporate good work habit instructions in their every day teaching and that they should model motivation regulation strategies.

In closing this section, we would like to refer briefly to a recent shift in motivation research, namely from socio-cognitive theories with a clear focus on the motivational beliefs and motivation regulation strategies of individual students to socio-cultural motivation theories, which focus on the co-construction of motivational beliefs and motivation regulation strategies (see e.g., Perry et al., 2006).

2.4.1. Conclusion

We have acquired a great deal of information about motivated behaviour, but we still have a lot to learn concerning the mechanisms that energize students in the classroom in such a way that learning is enhanced. Our helicopter view on the key components used by the different motivation theories has hopefully provided the reader with a well-informed view on the different motivation constructs that have been studied within specific mini theories. Yet – as was argued – it is important to take theories of motivation to the classroom and study students' motivation in concert with their strategy use. We would like to encourage the development of such integrative theories. Instead of increasing the distance from theory to practice and focusing exclusively on the development of a single motivation theory, researchers need to build a bridge between different motivation theories and between theory and practice. Theorists from different theoretical perspectives should work together and share ideas on how to establish more understanding of

motivation processes. Also, interventions need to be based on the key motivation mechanisms that provide the essential energy sources. In other words, we advocate that future research on motivation should focus on the cues in the learner and the learning environment that get students going on the learning pathway and energize them to face difficulties when they occur.

2.4.2. Issues for future research

We would like to end this chapter with some suggestions for future research. Further research is needed on how intrinsic and extrinsic motivation influence each other. We also need to gain more insight into how students pursue their multiple goals in the context of the classroom and how these goals affect each other.

Apart from further motivation research, we would also welcome better written papers. Not all motivation researchers provide a clear conceptualization of the motivation construct. They often don't even define what motivation is. Neither do they discuss the key motivation constructs in their papers nor do they measure them. It would become a lot easier for researchers, graduate students, teachers, and educators to understand the research and interpret the results when authors would provide not only a clear description of their own theory but would also link it to the major mechanisms that underlie engagement in the classroom. Authors of research papers should not talk about motivation in general, but should describe the specific motivational theory they have used to design their study, highlighting the diverse energy sources that made students move forward and the factors that influenced these mechanisms. This small intervention would already produce large benefits, both in terms of theoretical understanding and formulating practical implications.

There is also a clear need for practical guidance about the elements in the classroom that influence motivation. Researchers should focus on the principles of motivation that can help teachers and educators to foster motivation in their students. A clear description should be given of the strategies that enhance motivation in the classroom and of the environmental factors that facilitate and impede the actual use of these strategies.

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**Note.* References that are only used in the Appendix and not throughout the chapter are marked (*).

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Appendix.

Category	Theory	Initiated by	Year	Key constructs	Conceptualization of motivation	Dominant assessment method
Early motivation theories	1. Arousal theories	James; Lange; Hebb; Schachter	1884; 1885; 1949; 1964	Emotional arousal; perception; contextual	Motivation depends strongly on affective processes.	Observation; self-rating (trait)
	2. Volition/will	Wundt; James	1920	Volition; will, organismic	Will reflected an individual's desire, want, or purpose; volition was the act of using the will (Wundt); Will is a state of mind in which we desire a particular action and believe that its manifestation is within our power. Volition is the process of translating intentions into actions (James).	Introspection (trait)
	3. Instincts	James; McDougall;	+- 1900	Instincts; organismic	Instincts are not simply dispositions to act in particular ways, but rather comprise cognitive (i.e. awareness of ways to satisfy the instinct), affective (i.e. emotions aroused by the instinct), and conative (i.e. striving to attain the object (goal) of the instinct) components.	*information on assessment not retrieved* (trait)
	4. Theories of imitation	Tarde; Piaget; Miller & Dollard	1903; 1962; 1941	Matched-dependent behaviour; reinforcement; development	Natural instinct to imitate the actions of others.	Observation (trait)
	5. Conditioning theories	Thorndike; Pavlov; Skinner	1913; 1927; 1953	(classical; operant) conditioning; reinforcement;	Association of stimuli with responses is the mechanism responsible for behavioural	Observation (trait)

Category	Theory	Initiated by	Year	Key constructs	Conceptualization of motivation	Dominant assessment method
				connectionism (law of effect); mechanistic	change (including motivation).	
	6. Drive theories	Woodworth; Hull; Spence; Mowrer; Miller	1918;	Drive; intensity; direction; persistence; mechanistic	Drives are internal forces that seek to maintain homeostasis, or the optimal states of bodily mechanisms. Focus is on overt behaviour but explanation in terms of inner needs.	Observation (trait)
	7. Freud's theory	Freud	1923/1966	Drive; id; mechanistic	Psychical energy developed when needs exist; needs are satisfied by channelling energy into behaviour that reduce needs. No importance of personal cognitions and environmental factors.	Rorschach responses; dreams; TAT; free associations; verbal texts (trait)
	8. Purposive behaviorism	Tolman	1932	Expectancy; latent; goals; mechanistic	Environmental stimuli are means to goal attainment and must be studied in the context of behavioural sequences to understand people's actions.	Observation (trait)
	9. Field theory	Lewin	1935	Needs; person; environment; contextual	Every psychological event depends upon the state of the person and at the same time on the environment.	*information not retrieved* (trait)
	10. Trait and humanistic theories	Murray; Maslow; Allport; Rogers	1938	Traits; mental processes; contextual	Actualizing tendency is the basic motivating force behind behaviour.	*information not retrieved* (trait)
	11. Needs and goals	Murray; Maslow	1938; 1954	20 needs/five hierarchical needs; stable personal characteristics; environment provides	Needs have two aspects: a directional or qualitative aspect that specifies the object that will satisfy the need and an energetic or quantitative aspect that influences the frequency,	Thematic Apperception Test (TAT); projective measure (analysis in terms of needs expressed or

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				opportunities for need satisfaction	intensity, and duration of behaviour.	reaction to series of ambiguous pictures) (trait)
Socio-cognitive theories with a focus on expectancy and value	12. Cognitive consistency	Heider, Festinger	1946; 1957	Balance; cognitive dissonance; contextual	Motivation results from relations between cognitions and behaviour. When tension occurs, there is a need to make cognitions and behaviour consistent.	Dissonance notion is vague and difficult to verify experimentally (trait)
	13. Achievement motivation	Atkinson, Lewin	1957; 1964	Fear of failure; seek success (internal); expectancy; value (environmental); incentive value of success	Motives represent learned but stable and enduring individual differences or dispositions and include two basic achievement motives: to seek success, and to fear failure.	TAT and Test Anxiety Questionnaire (trait)
	14. Expectancy-value	Atkinson	1957	Incentive value; probability of success; achievement motive	Motive for success = achievement motive x probability of success x incentive value	TAT (trait)
	15. Attribution theory	Weiner	1980	Perceived causes; attribution process; external information; internal schemas; locus; stability; controllability	Motivation results from a goal of understanding and mastering the environment and ourselves. Individuals seek to understand why things happened and why people say and do the things that they do.	Rate a list of attributions; analysis of written material; coding of verbal statements retrospectively (think-aloud protocols); free recall task; strategy-use (trait)
	16. Cognitive processes	Heckhausen	1980	Pre-/post-decisional state; deliberation; implementation; expectancy	Motivation encompasses all processes (predecisional = motivation and postdecisional = volition) related to deliberation on	Reported thoughts (trait)

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					incentives and expectancies for the purpose of choosing between alternative goals and the implied courses of action.	
	17. Expectancy value (Extended)	Eccels; Wigfield	1983	Attainment value; intrinsic interest; extrinsic utility value; perceived costs	Expectancies and values are cognitive beliefs that are related to the conscious decisions and choices individuals make about their achievement.	Self-reports; Likert scales (domain)
	18. Future Time Perspective	Lens and Nuttin	1985	temporal dimension; goal objects	Future time perspective is formed by the more or less distant goal objects that are processed by an individual.	Motivational Induction Method (trait)
	19. Social cognitive theory	Bandura	1986	Triadic reciprocality among person, behaviour, and environment; modelling; learning is not performance	Motivation to perform previously learned skills might stem from the belief that the skills are appropriate in the situation and that the consequences will be positive. Motivation is goal-directed behaviour instigated and sustained by expectations concerning the anticipated outcomes of actions and self-efficacy for performing those actions. Motivated learning is motivation to acquire skills and strategies rather than to perform.	Observation (domain)
	20. Self-efficacy beliefs	Bandura; Schunk	1986	Self-efficacy beliefs; outcome expectations	People's judgments of their capabilities to organize and execute courses of action required to attain designated types of performances determines their choice of tasks.	Rated on a 0-100 point scale. 0 is no confidence in ability to do a task (task-specific)

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Socio-cognitive theories with a focus on intrinsic motivation	21. Need to feel competent	White; Harter	1959	Arousal; effectance motivation derived from success; generic; challenge; curiosity; control; fantasy; intrinsic; extrinsic; contextual	People have an inherent need to feel competent and interact effectively with the environment. Engaging in activities for its own sake (intrinsic). Engaging in activities as a means to an end (extrinsic).	Self-reports (trait)
	22. Constructivist theory	Bruner	1960	Activating current knowledge, context, optimum level of aroused attention	Students become motivated when instruction is in line with personal relevant experiences and contexts.	Narratives (trait)
	23. Locus of control	Rotter; De Charms	1966; 1968	External control; internal control; attribution	People differ in their beliefs that outcomes generally occur independently of how they behave or usually are contingent on their behaviour.	Self-reports (trait)
	24. Flow	Csikszentmihalyi	1975	Flow; emergent motivation	Discovery of new goals and rewards as a consequence of interacting with the environment.	Self-reports (trait)
	25. Mastery motivation	Harter	1978	Effects of failure; challenging tasks; socializing agents; need for approval; perceived competence; self-rewards; domain	Intrinsic motivation comprises a preference for challenge, incentive to work to satisfy one's curiosity, independent mastery attempts, independent judgment, and internal criteria for success and failure.	Self-reports (trait)
	26. Test anxiety	Tryon	1980	Cognitive component; emotionality component	Test anxiety is an unpleasant feeling or emotional state that has physiological and behavioural concomitants, and is experienced in formal testing or other evaluative situations.	Self-reports (trait)
	27. Perceptions of	Harter	1982	Competence;	Self-perceptions of competence	1-4 forced choice

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	competence			domain specific	are students' self-evaluative judgments about their ability to accomplish certain tasks.	scale: Perceived competence scale (domain)
	28. Self-worth/esteem	Harter	1985	Basic need; emotional reaction; self-handicapping	Individuals' affect toward or evaluation of themselves.	Self-reports (trait)
	29. Self-determination theory	Deci; Deci and Ryan	1980; 1985	Autonomy; relatedness; competence	Humans need to be competent and self-determining in relation to the environment. Intrinsic motivation is an innate need and differentiates with development through internalization of values and self-regulatory influences.	Self-reports (trait 1-7 forced choice)
	30. Situational and personal interest	Krapp, Hidi, and Renninger	1992	Personal interest; situational interest; state interest;	Personal interest is a stable personality variable. Situational interest is situated and is generated by the features of the immediate environment.	Self-reports; observations; peer ratings; self ratings; (trait and situation)
Socio-cognitive theories with a focus on goals	31. Goal-orientation theory	Nicholls; Elliot and Dweck; Dweck and Legget	1984; 1988; 1988	Goal orientation; mastery and performance goals; approach-avoidance; context dependent; situational	Integrated pattern of beliefs that leads to different ways of approaching, engaging in, and responding to achievement situations.	Self-reports; Likert-scales; (trait)
	32. Goal-setting theory	Locke and Latham	1990	Motive, value, attitude, psychological needs, desire, wish; drive instinct, biological needs; goal level; goal commitment	A goal is something an individual is consciously trying to attain, but the thing being sought is outside the individual. External factors can have positive influences on goal level and goal commitment.	Self-reports (trait)
	33. Motivational systems theory	Ford	1992	24 (multiple) goals; goal content; goal	Integrative theory that attempts to organize various motivational	Self-reports (trait)

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				processes; goal-setting strategies; personal agency beliefs; emotions	constructs from different theories into one theory. Motivation = goals x emotions x personal agency beliefs.	
Integrative motivation theories	34. Social cognitive theory of self-regulation and motivation	Zimmerman	2000	Self-regulatory cycle; forethought; performance and volitional control; self-reflection; modelling	Forethought affects performance or volitional control and consequently self-reflection. Self-regulatory cycle is complete, when self-reflection affects forethought.	self-reports, observations, retrospective interviews (situation)
	35. Dual Processing self-regulation model	Boekaerts	2000 2005 2006	Self-regulation; motivational beliefs; motivation regulation strategies, including volition and affect regulation	Motivation strategies steer and direct students' thoughts, feelings, and actions in the direction of valued goals and away from undesired goals. The flow of energy fuelling the actual learning process is coming from students' activated motivational beliefs and their confidence in available strategies.	On-line motivation questionnaire assessing motivational beliefs, learning intention, effort, self-assessment, attributions and affect (situation) Strategy use is measured with questionnaires and examining traces left behind
	36. Multi-dimensional and multi-level cognitive-situative perspective	Volet	2001	cognitions; motivations; emotions; affordances of learning context	Motivation is the result of congruence between individual learning tuned to the affordances of the learning context and the support of individual engagement in learning by the community of practice	Online measurement of interest (situation)