An Instruction Sequence Promoting Autonomous Motivation

for Coping with Challenging Learning Tasks

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Teachers often feel that many of their students show very little enthusiasm and interest in their studies and are not willing to cope with challenging subjects. Many students also try to invest as little effort as possible and sometimes actively avoid opportunities to develop new skills and knowledge. In Self Determination Theory (SDT, Ryan & Deci, 2000, and see also chapter 2 in this volume), these students are conceived as lacking intrinsic motivation, and as externally motivated, a-motivated or defiant. And, as explained by several chapters in this volume and documented in past research (e.g.,   ), external motivation and a-motivation often lead to low levels of engagement and processing, diminished capacity to apply what is learnt in other domains, and lack of creativity (e.g., Assor, Kaplan, Kanat-Maymon & Roth 2005; Assor, Vansteenkiste & Kaplan, 2009; Deci, Ryan & Williams, 1996; Vansteenkiste, Simons, Lens, Soenens & Matos, 2005). In addition, external motivation or a-motivation also appears to result in withdrawal from challenging subjects, especially in the domains of Mathematics and the exact sciences.

In this chapter I present a sequence or structure of teaching and learning that is based on SDT, as well as on some other motivation theories, which can strengthen autonomous motivation for learning and coping with challenging tasks among students. This sequence was applied, on a small scale, in some schools in Israel. Interviews with teachers and classroom observations suggest that it can indeed enhance autonomous motivation. I will start with an analysis of potential reasons for lack of autonomous student motivation for learning a specific subject. Then, based on this analysis, I will present an instruction and work structure including four stages. To assist application I will also present an observation form that enables teachers to examine how well they apply some of the stages or actions suggested.

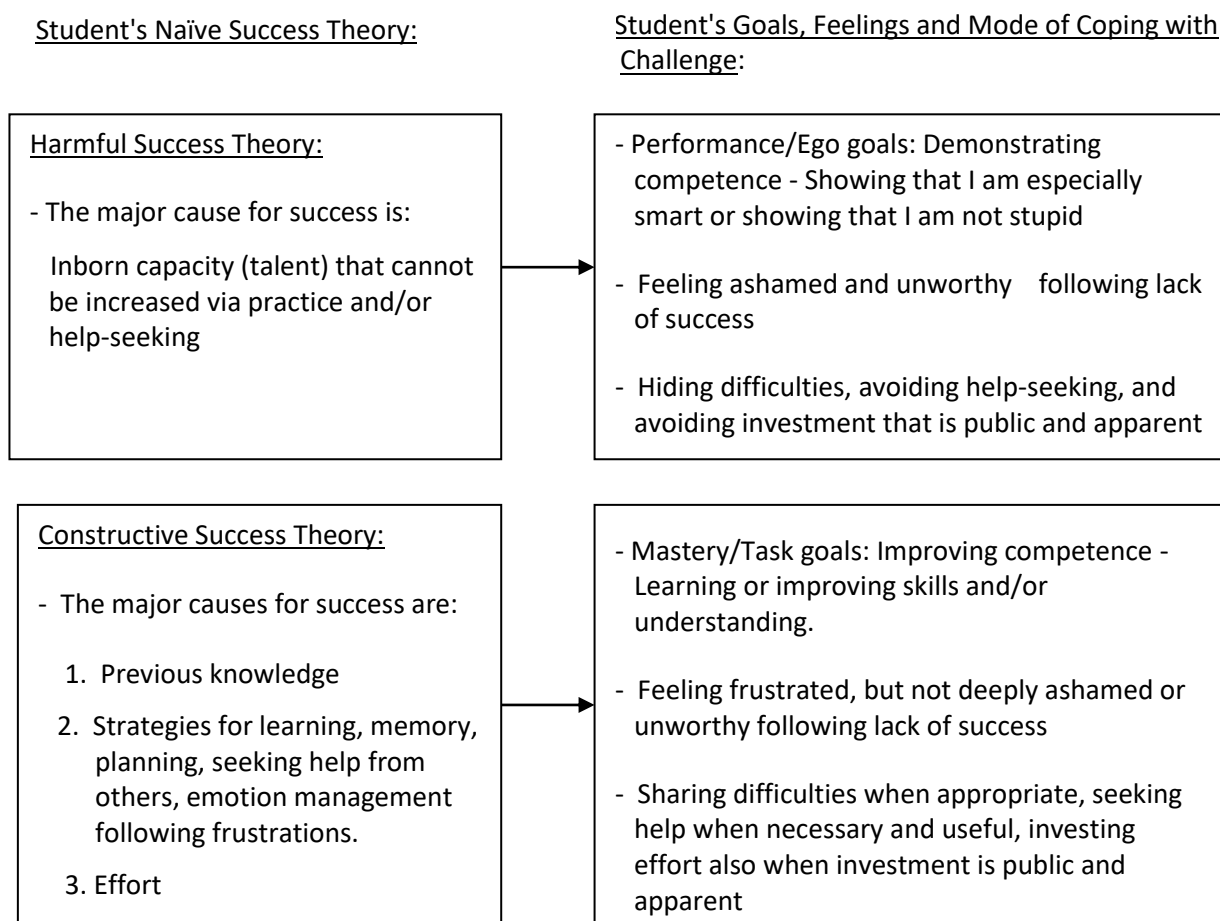## Why do Students Avoid Coping with Challenging Subjects?

Based on SDT, students' a-motivation and avoidance of challenging tasks can be viewed as resulting from their experience of these subjects as threatening three basic psychological needs: competence, autonomy and relatedness. In my experience, the major reason many students avoid coping with challenging tasks is that they experience these tasks as threatening their need for competence. In addition, lack of sufficient support for the two

other needs may further undermine this students' willingness to cope with difficult tasks. Accordingly, I will devote considerable attention to the threats posed by challenging tasks to students' need for competence, and then discuss the two other needs more briefly.

The need to feel competent. It appears that students feel that a given task or subject threatens their need for competence due to three major factors: (a) Frequent past failures, (b) exposure to verbal comments or non-verbal behaviors implying low ability, and (c) belief in a harmful naïve theory of success. The first factor is almost self-evident: Students who have suffered many past failures or were exposed to messages implying low-ability are likely to fear that their attempts to cope with a new task would only further augment their sense of low competence. The third factor - belief in a harmful naïve theory of success - requires some explanation. This notion is derived from Nichols work on achievement goals (e.g., Nicholls, 1984). Dweck's work on naïve theories of intelligence (e.g., Dweck, 1999). A similar view is presented by Skinner, Wellborn and Connell (1990).

Figure 1 summarizes the main components of harmful versus constructive naïve theories of success, as well as some major outcomes of these theories in terms of students' goals, feelings and mode of coping with challenges.

Figure 1: Harmful versus Constructive Naïve Theories of Success and their Outcomes in terms of Students' Goals, Feelings and Modes of Coping with Challenges

Student's Naïve Success Theory:

Student's Goals, Feelings and Mode of Coping with Challenge:

Harmful Success Theory:

- The major cause for success is:

  Inborn capacity (talent) that cannot be increased via practice and/or help-seeking

- Performance/Ego goals: Demonstrating competence - Showing that I am especially smart or showing that I am not stupid

- Feeling ashamed and unworthy following lack of success

- Hiding difficulties, avoiding help-seeking, and avoiding investment that is public and apparent

Constructive Success Theory:

- The major causes for success are:

  1. Previous knowledge
  2. Strategies for learning, memory, planning, seeking help from others, emotion management following frustrations.
  3. Effort

- Mastery/Task goals: Improving competence - Learning or improving skills and/or understanding.

- Feeling frustrated, but not deeply ashamed or unworthy following lack of success

- Sharing difficulties when appropriate, seeking help when necessary and useful, investing effort also when investment is public and apparent

When students hold a harmful success theory, they believe that a major reason for their lack of success in coping with academic challenges, across many situations, is their lack of inborn capacity (talent). In addition, they also believe that this capacity cannot be developed and increased as a function of practice and instruction provided by skilled helpers. This theory ignores the fact that, often, lack of success is a result of lack of necessary prior knowledge or skills, not knowing or not using appropriate learning strategies, not using social and emotional strategies to achieve success and cope with failure, or simply not investing enough effort. This theory is termed "harmful" because it leads students to suspect that if they invest a lot and still fail this would cause them and others to believe that they are stupid or not as smart as they feel they have to be. Because failure following considerable investment is interpreted as indicating poor inborn capacity, students feel ashamed and unworthy when they fail, try to hide their difficulties and failures and are reluctant to seek help. In addition, because they believe that the investment of much effort indicates Lack of capacity they avoid investing much effort in public.

Finally, because they are so concerned that failure or lack of great success following effort will disclose their limited inborn and unchangeable capacity, they mainly focus on trying to impress others that they have high ability (or making sure they do not appear incapable) rather than improving their ability. In short, they focus on ability demonstration rather than on ability improvement. In the relevant literature, these focus or orientation is termed performance goal (e.g., Dweck, 1999) or Ego goal orientation (Nicholls, 1984). Martin Convington (1992) described a similar orientation in his perceptive descriptions of students' desperate attempts to protect their sense of self worth, and Skinnr

In contrast to students holding a harmful success theory, those holding a constructive theory believe that the major causes for success are previous knowledge, appropriate strategies, and/or effort rather than limited and unchangeable inborn capacity. Therefore, when these students fail they do not feel ashamed, they do not hide their failure, they try to understand what strategies or knowledge they need to acquire in order to cope better, and they are willing to put more effort and/or seek help. In addition, because failure simply implies lack of sufficient knowledge, effort or strategies, they focus on ability improvement and hold mastery goals (Dweck, 1999) or Task orientation (Nicholls, 1984).

The need to feel autonomous. As already noted, in my opinion, the major reason students' often avoid challenges is that these challenges threaten their need for competence. However, students can be a-motivated or reluctant to tope with certain tasks also because these tasks threaten their need for autonomy (e.g., Assor, 2012; Assor, Kaplan & Roth, 2002). The need for autonomy involves the desire to feel that one is able to self-regulate and

self-organize one's actions. Thus, students feel that their need for autonomy is supported when others allow and help them to handle themselves in ways they find most valuable and useful for themselves. In contrast, students feel that their need for autonomy is frustrated when others coerce and pressure them to do things they do not value or are not interested in. Consistent with this view, students may avoid investing in difficult tasks when they feel that teachers are too controlling and not allowing them to do things in the pace and manner they find useful.   In contrast, they may be willing to work harder when teachers allow them to choose subjects, ways of working, and ways of being evaluated. These aspects of autonomy supported are emphasized in the instruction sequence to be presented.

The need for relatedness. Another reason why students sometimes avoid working hard is that investing effort may hurt their social standing, since "cool" students are not supposed to work hard. In addition, some students may feel that excelling in some subjects may cause envy which may cause some of their classmates to be less affectionate and friendly. More generally, students need to feel that serious attempts to cope with challenging and difficult tasks are not likely to undermine the affection they get from other classmates. The proposed instruction sequence tries to incorporate this need in some of the activities and procedures it includes.

A detailed Description of an Instruction Sequence Promoting Autonomous Motivation for Learning and Coping with Challenging Tasks

Figure 2 provides a detailed description of the instruction sequence. The sequence is designed for regular (often crowded) classrooms aimed at helping teachers to provide at least some support for students needs as part of their regular instruction process. The sequence is especially relevant and more feasible and workable for instruction and learning conducted in small groups or for individualized instruction. However, major aspects of it are also relevant for large classrooms, provided that teachers are willing to reduce the amount of "material" (concepts, facts, skills) they try to cover. As noted elsewhere in this volume, the notion that "less is more" and trying to avoid flooding students with large amounts of material may be a good pedagogical and motivational practice, as they allow students time to digest things at their own pace, and minimize the risk of creating a pressuring class atmosphere. As I describe the specific components and practices comprising the sequence, I will also point to the way they are likely to support students' needs. However, readers are encouraged to make their own speculations on how different components and practices may affect students' and teachers' needs. This is important because we sometimes cannot predict how a certain well-intentioned procedures will be experienced by students and teachers.

I. **Classroom preparation: Creating a class culture supporting a constructive theory of success and autonomous adherence to classroom rules while teacher is not paying attention**.

In this phase, students learn concepts and start to internalize values that teachers can later refer to when students cope (or fail to cope) with various challenges. Students knowledge of and internalization of such concepts and values is essential to mobilize students' understanding and cooperation when students show a-motivation, external motivation, or defiance, and when students are unwilling to work quietly without supervision when the teachers' attention turns to one student who needs feedback or assistance. It is possible to distinguish between a narrow-focus and a wide-focus focus. The narrow-focus approach includes two components:

(a) **Class discussions and activities promoting learning and valuing of the notions of constructive and harmful success theories**. The goal of these learning activities is to promote understanding of and identification with a constructive theory of success and a culture of ability improvement, which in turn leads to the development of a class and school culture of ability improvement, in contrast to ability demonstration. This culture includes a system of expectations, symbols and interpretive dispositions reflecting and expressing a constructive theory of success and a nonchalant problem-solving approach to lack of success.

It is possible to create such an ability improvement culture in classrooms via class activities, discussions, movies and stories focusing on the two theories and their consequences. **Personal demonstration by teachers is especially helpful**. In such demonstrations, teachers may share with their students how they held a harmful success theory, which created feelings of shame, and prevented them from investing effort or seeking help. It is also useful to expose students to people they can easily identify with, who tell students how they avoided coping with certain subjects and how they overcome their difficulties by changing the way they interpret their lack of success and focusing on ability improvement rather than demonstration. It is also very important to illustrate the theories via visual and physical artifacts such as posters on the classroom walls, graphic displays in notebooks and activity calendars, etc. Following a more distant and less personal discussion of the concepts, it is often useful to sensitively conduct activities in which children start sharing how they respond to difficult challenges, including sharing feelings of shame, fears that failure may affect their social standing, and worries about the consequences of disclosing difficulties and seeking help.

Figure 2:

An Instruction Sequence Promoting Autonomous Motivation for Learning

and Coping with Challenging Tasks

(I) **Classroom Preparation**: Creating a class culture supporting a constructive theory of success and autonomous adherence to classroom rules while teacher is not paying attention.

(II) **Application of the Sequence in Individual and Group Work**:

    (**a**) Joint student-teacher setting of a general learning objective.

    (**b**) Joint formation of a work and evaluation plan.

    (**c**) Structured ongoing student work. Students work according to the plan they have formulated, while receiving three types of competence supports:

        (1) Informational teacher feedback: Specific, frequent, non- comparative, focusing first on positive aspects, and supporting a constructive success theory.

        (2) Teacher support for coping with non-success: (a) Helping students to identify potential reasons for their non-success in a way that supports a constructive success theory; (b) Helping students to identify missing strategies and supporting strategy development (only when relevant); (c) Helping to acquire missing basic knowledge; (d) Changing or modifying the objective and the plan; (e) Ongoing emotional and moral support

        (3) Peer Support: Working with student and class-mates on assisting each other and perhaps also providing informational feedback.

    (**d**) Bi-directional Summary: Student and teacher summarize their attainments, and identify strengthes and difficulties in their collaboration.

    (**e**) Joint setting of a new general goal.

(III) **All-classroom interim activities and and summary discussions:** Aimed at (a) identifying classroom processes that undermine or enhance students' coping with Challenges, (b) fostering a constructive theory of success, and (c) cultivating classroom behaviors and atmosphere that enhance autonomous motivation.

(b) <u>Class discussions and activities promoting autonomous internalization of and adherence to norms of consideration for others and acceptance of class rules and procedures</u>. As will be shown later, the sequence requires students to internalize values of consideration of others and respect for class rules rather than rely on external regulation by the teacher. In order to attain internalization of these norms and rules, teachers have to discuss these issues with their class, explain the rationale, and have students participate in the formation of rules and procedures ensuring that the teacher can work with several students while the rest of the class does not disturb and keeps working. After the rules are applied, any deviation from them should be dealt with immediately, in autonomy supportive ways. That is, via discussion, non-vindictive but firm limit settings, and joint decision making concerning procedures that would minimize future violations of the jointly formed rules.

The wide focus includes a third component:

(c) <u>Activities promoting the learning of SDT-based concepts of four motivation types (autonomous, controlled, a-motivation and defiance) and the needs underlying them</u>. These concepts are learnt in a simplified way. The understanding and learning of these concepts may help to create a classroom culture that is sensitive to students and teacher needs, and may enhance students' understanding of what is stopping them from studying or from cooperating with the teacher. A description of classroom features and activities that help to create a need-supporting classroom appears in Assor, Kaplan, Feinberg and Tal (2009) and in Feinberg, Assor, Kaplan and Kanat-Maymon (2014). It should be noted that the inclusion of this type of activities demands considerable time and effort, and from my experience, it can be added at later stage. Moreover, many aspects of the sequence already include components supporting students and teachers needs without explicitly talking about it.

(II) <u>Application of the Sequence in Individual and Group Work</u>

(a) <u>Joint student-teacher setting of a general learning objective</u>.

This part starts with an individual conversation with each child, in which the teacher explains the rationale for the joint objective-setting and the entire sequence. Essentially, teachers explain that they apply the sequence so that each student can develop knowledge and ability in an area that is important for her/him. Then, the teacher asks the child to share subjects, concepts or skills she/he would like to develop or learn. The teacher may also present some goals for the child and ask for the child thoughts and preferences regarding these goals. Often, one meeting would not be enough and students would need to meet for

one or two more sessions. The teacher may also help the child find what is of special importance or interest to her/him by suggesting various activities that may help to discover such interests and priorities.

(**b**) **Joint formation of a work and evaluation plan**.

Teacher and student would collaboratively formulate a work plan aimed attaining the learning objective they set jointly. The plan usually includes short-term, realistic, objectives (specific concepts and skills) constituting benchmarks (and necessary steps) in the way to the more distant and general learning objective. The plan should also include ways of evaluating the extent to which the benchmarks were attained. To set up such a plan it is important to assess student's mastery of knowledge (and sometimes also strategies) necessary to attain the general learning objective. It is important to emphasize that this assessment should be carried out only after the rationale for it was explained and accepted by the students, so they do not experience it as a controlling act. It should also be noted that people are often unaware of their difficulties and how much effort they would have to invest to acquire missing knowledge (see Zimmerman, 2002, and personal communication). As a result teachers may sometimes have to insist, quite firmly, that an initial assessment should be carried out even when students do not see a need for it. Of course, in negotiating this issue, sensitivity to students' emotions and needs is extremely important, as is an attempt to attribute the considerable lack of knowledge or skills to factors other than limited inborn capacity (i.e., use terms reflecting a constructive theory of success). There is considerable research suggesting that the setting of short term optimal objectives (and specific, timely, and informative feedback on the extent to which these objective are met) is essential to the maintenance of students' sense of efficacy, competence, and motivation (e.g., Schunk, 1996).

Importantly, in order for teachers to conduct an informative assessment of knowledge and skills required to attain various learning objectives - they need to know the relevant knowledge domain quite well. That is the have to be knowledge and pedagogy experts in that domain, and the application of the Instruction sequence may in fact help them to further develop their expertise, thus supporting teacher's sense of competence as well.

Following Zimmerman (2002), the initial objectives may focus on successful mastery of important strategies, and not on performance in the tasks the strategies are supposed to help with. For example, if students learn strategies for extracting the main concepts from a written text, this is what they should receive feedback on, rather than how they write and organize a text based on these concepts. We should also be very careful to emphasize to both teachers and students, that strategies are only tools for mastery knowledge and skills, so it is very important to assess if students really needs them, as some students

may have their own ways of learning and do not need to be formally introduced to various strategies.

 (c) **Structured ongoing student work**.

In this phase, students work according to the plan they have formulated, while receiving three types of competence supports. These supports are described below:

(1) **Informational teacher feedback**. To support student's sense of competence and autonomous motivation as they try to reach the objectives they set up, it is absolutely essential that students receive frequent informational feedback. It is desirable that at least some of the feedback will not be formal or written, but rather, a part of a nonchalant verbal interchange that occurs as the teacher moves around the classroom or stops briefly to see how a student is doing. There is considerable research suggesting that such feedback should *be specific, non-comparative, focusing first on positive aspects, and supporting a constructive success theory* (e.g., Butler, 1987; Hattie & Timperley, 2007; Madjar & Assor, 2013). From this perspective, teachers would do well to give specific comments pointing to areas of improvement and aspects that need to be improved and are not yet mastered. It is also important to try to avoid giving numerical grades that can easily encourage comparisons between students. Another option is a within student grading reflecting rate of improvement relative the student's past performance. In order to strengthen students' constructive theory of success, it is important to avoid trait oriented feedback such as "you are talented and have a high potential" because when students do not succeed they may attribute their non-success to lack of talent and potential (i.e., unchangeable inborn capacity). In contrast, feedbacks pointing to knowledge/skill components that can be improved, and potential strategies for reaching such improvements, strengthen a constructive success theory by implicitly implying that success is a product of strategies and effort.

(2) **Teacher support for coping with non-success**. When students do not succeed or fail, it is, of course, important that the teacher will address this issue and help students cope with the failure. In this section we describe five components of teachers support following student failure. These components are presented in the order they often appear in practice.

2a. Helping students to identify potential reasons for their non-success in a way that supports a constructive success theory. When students do not succeed or fail, it is extremely important that teachers will, as soon as possible, address their experience and the way they interpret it. If teachers do not intervene, students may very quickly interpret their non-

success in ways that only further consolidate the harmful success theory they already hold. To prevent such early unfortunate consolidation, teachers may invite students to collaborate with them in an attempt to identify which of the causes of success and non-success that were already discussed in the preparation phase (and may also appear on nearby poster) may account for their (temporary) non-success. Where they using inappropriate strategies? Perhaps they do not possess some necessary concepts or skills that are required to master the task? Did they put enough effort or leave enough time to practice?

As students might feel rather upset by their non-success, teachers need to be quite sensitive in these kinds of interventions. For example, it appears important to respect students' negative feelings following non-success, rather than try to quickly comfort them or provide simple practical solutions. Often, attempts to somehow quickly help students feel better may be interpreted as lack of understanding or as an invalidation of students' experiences. There are several useful books and training programs providing guides for sensitive listening in such incidents, including the identification of useful and non-useful teacher responses (e.g., Gordon, 1975; Faber & Mazlish, 2008). In my experience, such training programs often help teachers to create more empathic and open relationships with students, which then allow teachers to work together with students as they try to understand the reasons for lack of success and as they plan ways of overcoming difficulties.

Finally, it appears that students' failure experiences, while clearly unpleasant for all involved, may create an opportunity to understand whether students' hold a harmful success theory, how deeply they adhere to it, and how destructive it is for them. To the extent that this is the case, teachers' responses to the way students interpret the failure may help students to start shifting toward a more constructive success theory. As teachers work with students, it often helps if they give personal examples showing how changing their naïve theories helped them to cope effectively with failure or avoidance of challenges. In addition, as teachers work with students in analyzing the reasons for failure, it is important that they convey a matter-of-fact problem-solving approach, viewing lack of success as a natural phase of learning.

2b. <u>Helping students to identify missing strategies and supporting strategy development</u> (only when relevant)**.** Often, lack of success in a learning task is caused by lack of reliance on useful strategies or deficient use of such strategies. Roughly, it is possible to distinguish between learning and organization strategies and socio-emotional strategies. The category of learning strategies include methods for enhancing reading comprehension (e.g., Duffy, 2009; Dole Nokes & Drits, 2009; Pressley, et al., 1995), summarizing materials, memory strategies, conceptual mapping, methods for sequential organization of numerical

data, efficient time-planning, etc (e.g., Weinstein, 1994; Weinstein & Hume, 1998; Zimmerman, Bonner & Kovach, 1996). Socio-emotional strategies include, for example, various emotion-management skills, and help-seeking skills.

While the importance of learning and organization skills is clear and well known, teachers often are not sufficiently aware of the potential contribution of emotion management skills. Failures, especially those perceived as unfair, often arouse strong feelings of anger, envy, sadness or anxiety. In coping with these feelings students often use strategies that may reduce the painful emotions in the short run, but are fairly destructive in the long run. For example, students may devalue the merit of the subject they failed in, deny the failure or its implications, unjustly accuse others for their failure, destroy helpful teachers comments, etc. (e.g., Rijavec & Brdar, 1997; Skinner & Wellborn, 1997). In such cases, teachers may try to help students learn more constructive coping strategies adapted from cognitive-behavioral approaches such as acceptance and commitment (e.g., Hayes, Strosahl, & Wilson, 1999) and/or mindfulness training (e.g., Greenberg & Harris, 2012; Zinn, 2003). These methods strive to enhance people's ability to accept their negative emotions, and observe them without becoming fully identified with these emotions, and controlled by them. Of course using these practices requires training and personal maturity. However, it appears that training teachers to use these methods can be beneficial to both teachers and students.

2c. Helping to acquire missing basic knowledge. As was already noted, failure can often be a product of missing concepts and vocabulary that is essential for understanding the task and/or coping with the task successfully. In such cases, teachers need to help students to bridge the gap. Often, teachers do not have to do it themselves. They can connect the student with other teachers, tutors, other students etc. In some cases they can provide useful internet tutorials or library resources. In all these cases it is extremely important that teachers follow up and examine to what extent students really start to close the knowledge gap. In cases students do not take any responsibility, teachers may try to enhance student motivation by trying to understand what is stopping them and by helping to create a structure that enhance student motivation to invest in acquiring the missing knowledge.

2d. Changing or modifying the objective and the plan. At times, it may become clear that the original distal learning objective is too ambitious, not feasible, or is clearly not meaningful or interesting for the student. In such cases, it is necessary to choose another objective and reorganize the plan accordingly.

2e. Ongoing emotional and moral support. Throughout the whole process of coping with failures, it is important that teachers will, at times, transmit messages conveying their

belief that the student can effectively use the feedback they get and the strategies they are exposed to, as well as learn missing knowledge and skills. The emphasis is not on trait-like compliments such as "you are smart" or "talented", but more on messages such as "I am sure that you can learn the concepts you missed in an earlier grade", "I am convinced that you can find the kind of strategies that would work for you", and more generally: "if you work hard and use to the suitable strategies - you would meet the objective you set up for yourself". It is advisable to use these statements only sporadically, and they cannot substitute the various practices and acts described before.

(3) **Peer Support**. After the instruction sequence is applied and running fairly well, it is desirable to add the peer support component. This involves learning of ways of asking and giving feedback, when to ask for feedback, and how to give feedback and assistance in ways that contribute to learning and do not undermine the recipient's self-esteem or social standing. The feedback given should, of course, a constructive theory of success and an ability improvement culture. Methods for promoting constructive peer feedback and assistance appear in publications focusing on the promotion of cooperative learning in classrooms (e.g., Sharan, 1994; Slavin, 1995).

(d) Bi-directional Summary:

Following a period of collaborative work, it is important to set up a review and evaluation of the joint work process and its products. It is advisable to do this evaluation after there was some progress toward the attainment of the general learning objective or a significant interim objective. However, such summary may also be called for if there is very little progress. The review can address questions such as: Did students develop the knowledge or skills they wanted to develop (a product focus)? Did they develop useful strategies as part of the process? How did the student and the teacher feel throughout the process and presently? In discussing the last question it is advisable to use the motivational concepts of specified in SDT (i.e., intrinsic motivation, identified/integrated motivation, a-motivation, etc). Such discussion would be easier if those terms were learnt as part of the preparation phase (third component). However, it is possible to use these terms using everyday language referring to the same phenomena. Other important review questions include: What aspects of the sequence or the teacher's behaviors or reactions were helpful for students and what aspects hindered their progress and how? Similarly, what aspects of students' behaviors or reactions were helpful for the teacher and what aspects hindered her/his capacity or motivation to help? Often, the school, teachers, students or parents may

want to present the knowledge or skills students developed to parents or other people in the school community. In this case, students and teacher may discuss how they feel about it and what kind or presentation they prefer.

(e) **Joint setting of a new general learning objective**.

After the learning goal was attained (or mostly attained) and the summary and review process is over, the teacher and the student would discuss the next general learning objective. Often, because of lack of various constraints or other preferences, there would be a break and a new sequence (and learning goal) would only be initiated only after a several month break. In such cases it is useful to go back to the bi-directional so as to refresch what was learnt about the most effective and motivating ways of working together.

III. **All-classroom interim and summary activities and discussions.**

These activities and discussions are aimed at maintaining and supporting the values, norms and class culture and atmosphere that the preparation phase has started to establish. As such, they refresh and expand the students' understanding of naïve theories of success and their consequences, and class rules that allow the teacher to work with individual students while others work quietly on their tasks. More generally, such discussions may enable teachers to foster a sense of shared class responsibility for ability improvement of all students, as well as a general feeling of the class as a caring community. The discussions also aim at early identification of classroom processes that undermine the motivation and progress of individual children, as well as creating motivationally sound ways of coping with such impediments. As part of this process, teachers may expose students to the motivation concepts of SDT, so their understanding of what may account for progress or stagnation in individual learning and/or in caring among classmates may be deepened.

Summary Comments

This chapter presented an instruction structure that is likely to strengthen students' motivation to cope with challenging subjects they have previously avoided, mainly because they believe that they do not possess the required inborn talent. I believe that sensitive, high-quality, implementation of this sequence is likely to help students to discover that their self-sabotaging beliefs are not valid. It is important to note that the implementation of the proposed sequence should be supported by a system of professional, organizational and moral support within the school; a system that provides space for trial and error and provides continual guidance and opportunities for consultation when difficulties emerge. One area

where the proposed sequence may be especially relevant and useful is the domain of special education. In many special education classes there are enough teachers or teacher-aids to allow individualized and small group instruction. In addition, the challenges faced by many special education students are similar to those described in this chapter. Alfi, Katz and Assor (2004) described a mode of working with special education settings that can be integrated with the sequence presented in this chapter.

It is extremely important to note that the proposed learning sequence, of course, is not the only way to promote autonomous motivation to study challenging subjects. One limitation of this structure is that it fits small-group or individual instruction more that a whole-classroom instruction. In heterogonous, large-size, classrooms it may be quite different to implement such individualized learning sequences. Reeve (2009) have described a structure such as this. Bar-Ziv, Assor and Feinberg (2012) have described an in-service process and an observational system providing teachers with brief and clear guidelines on how to promote autonomous motivation in large classrooms.

A second, and very serious, limitation of the proposed sequence is that it may not fit students' who already have intrinsic motivation and considerable knowledge in the relevant subject. For them, the meticulous setting of a series of short-term concrete objectives and assignments and the frequent evaluations may actually be experienced as pressuring interferences that only undermine their intrinsic motivation, flexibility and creativity. When teachers spot such students, they may well want to allow them to work in ways that these students find most beneficial. Yet, for these students too, continual teachers' interest and availability are still important.

A third limitation of the proposed sequence is that it is based mainly on enhancing students' feeling that they are able to cope well with difficult challenges; that is, it augments students' sense of competence. However, it is possible that to reach a highly intrinsic motivation and great pleasure from studying a certain subject it is not enough to feel that studying the subject contributes to our sense of competence. Thus, a real sense of enchantment and fascination with a certain subject may be based, to a large extent, on sensing the "beauty" of that subject, the surprising aspects of it, its contribution to new important understandings, its capacity to expand our emotional experience or to connect more deeply to oneself or the world around us. In short, highly intrinsic engagement with a given subject may be, in part, due to its strong contribution to our intellectual, aesthetic, and/or emotional experiences; experiences that go beyond the sense of enhanced personal competence. The type of learning process proposed by Boaler (2009), may perhaps promote a type of learning characterized by such fascination and intrinsic motivation.

The last limitation refers to the type of knowledge and skills the sequence promotes. I believe that the proposed sequence fits mainly to the acquisition of skills and knowledge in what can be termed "basicLanguages": Math, language, computers, grammar, and maybe some basic concepts and procedures in various subjects, especially the exact natural sciences. This is because in these domains there is a relatively accepted knowledge structure, in which certain concepts and skills serve as a necessary foundation for more advanced ones. Because such knowledge structure exists, it is possible to create a relatively logical instruction sequence in which more basic aspects are acquired before more complex ones are presented. However, there are knowledge and thinking domains that are very important, but do not have clear knowledge structure beyond a few basic concepts and skills. In fact, many topics in the domains of the humanities, the arts and the social studies fall into this category. For example, how do we develop critical thinking regarding important social issues? How do we form interesting personal interpretations regarding the meaning of literary or artistic works? How do we foster a creative approach to the solution of various social or personal problems? It is evident, that the highly structured sequence proposed in this chapter is mostly irrelevant to the nurturing of these capacities. In these domains too it may, at times, be important to define concepts and skills students need to acquire, as well as establish criteria for evaluating creative or scholarly products. But, unlike in the proposed sequence, such definitions and criteria should not be introduced frequently, may be less precise, and are clearly be secondary to the more open and flexible critical and creative processes they are expected to serve.

In sum, despite some serious limitations, it appears that high-quality implementation of the proposed sequence may provide students with empowering experiences that enhance their capacity to cope with challenging subjects, at least in domains where there is a clear structure of basic concepts and skills. Importantly, the enhancement of students' motivation and capacity can also constitute a meaningful and motivating formative experience in the professional and personal development of the teachers working with the sequence.

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