

Designing Emotionally Sound Instruction - An Empirical Validation of the FEASP-Approach

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This article presents an empirical study testing the applicability and consistency of the so-called FEASP-approach dealing with strategies for making instruction more emotionally sound. The FEASP-approach represents a comprehensive and theory-based instructional design model addressing the integration of emotions into classroom instruction. 163 teachers and 53 students were asked about the importance of emotions, and also about the frequency and the effects of FEASP-related emotional strategies during instruction. Results show that there are clear indications that the FEASP-approach is relevant, usable, consistent, and affecting emotions in daily instruction. Finally, further steps in validating the approach are discussed.

Human emotions are highly correlated with interest, effort, irrelevant thinking, and also, what seems to be most important in daily instruction, with study achievements (Pekrun, 1998). Therefore, how emotions can be influenced during instruction is important for instructional designers. Up to now, the only comprehensive and theory-based instructional design model accommodating several types of different emotions is the FEASP-approach (Astleitner, 1999, 2000). This prescriptive approach assumes that 20 different general instructional strategies can increase positive emotions (i.e., sympathy and pleasure) and can decrease negative emotions (i.e., fear, envy, and anger). The FEASP-approach has not only been formulated for traditional instruction, but also for designing modern instructional technology (Astleitner & Leutner, 2000) (see Figure 1).

In contrast to many approaches which are closely related to "emotional intelligence" or "self science" (e.g., Stone-McCown,

Jensen, Freedman, & Rideout, 1998), the FEASP-approach is not dealing with the question of what should be learned in extra courses to develop certain student's emotions. However, it considers how any instruction should be designed to become emotionally sound without any significant additional resources. Despite this important practical advantage and despite the fact, that within the FEASP-approach a theoretically and practically funded mechanism for finding the relevant strategies was used, there are not yet any empirical data about the effectiveness of this approach in daily instruction. There are several open questions which should be answered by research activities in order to find out more about the validity of the FEASP-approach for designing and implementing emotionally sound instruction:

- 1) Are emotions important for teachers and students in daily instruction? Although, in basic research, the importance of emotions for learning has been demonstrated several times (e.g., Pekrun, 1992), it is an open question, whether instructional designers (e.g., teachers) and students find emotions and their consideration really necessary in daily instruction. For example, instructional designers might think, that emotions should be faded out, because

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Primary emotions	Instructional Strategies		Examples in Traditional Instruction	Examples in Instructional Technology
Fear reduction	F1	Ensure success in learning	Use well-proven motivational and cognitive instructional strategies	Cognitive learning design
	F2	Accept mistakes as opportunities for learning	Let student talk about their failures, their expectations, the reasons for errors, etc.	Q & A, success statistics
	F3	Induce relaxation	Apply muscle relaxation, visual imagery, autogenics, or meditation	Training delivered through multimedia
	F4	Be critical, but sustain a positive perspective	Train students in critical thinking, but also point out the beauty of things	Cognitive tools (semantic networking)
Envy reduction	E1	Encourage comparison with autobiographical and criterion reference points instead of social standards	Show students their individual learning history	Student progress tracking, using target lists
	E2	Install consistent and transparent evaluating and grading	Inform students in detail about guidelines for grading	Programmed fact-based evaluation and feedback
	E3	Inspire a sense of authenticity and openness	Install "biographic boards" telling others who you are	Personal information board
	E4	Avoid unequal distributed privileges among students	Grant all students or no student access to private matters	Rule-based granting of privileges
Anger reduction	A1	Stimulate the control of anger	Show students how to reduce anger through counting backward	Anger buttons
	A2	Show multiple views of things	Demonstrate how one problem can be solved through different operations	Linked information
	A3	Let anger be expressed in a constructive way	Do not accept escaping when interpersonal problem solving is necessary	Anger help option
	A4	Do not show and accept any form of violence	Avoid threatening gestures	Nonviolent action: motivational design
Sympathy increase	S1	Intensify relationships	Get students to know other students friends and families	Synchronous and asynchronous communication tools
	S2	Install sensitive interactions	Reduce students' sulking and increase their directly asking for help	On-/Offline trainings for empathic communication
	S3	Establish cooperative learning structures	Use group investigations for cooperation	Collaborative learning tools
	S4	Implement peer helping programs	Let students "adopt" children in need	Social networks on the Web
Pleasure increase	P1	Enhance well-being	Illustrate a probabilistic view of the future	User-friendly interface design
	P2	Establish open learning opportunities	Use self-instructional learning materials	Virtual classrooms
	P3	Use humor	Produce funny comics with students	Story-/comic-/cartoon-production systems
	P4	Install play-like activities	Use simulation-based instructional games	Instructional computer games

Figure 1. General instructional strategies of the FEASP-approach - overview (see Astleitner, 2000, p. 191; Astleitner & Leutner, 2000, p. 499).

they disturb the focusing on cognitive learning objectives or they are closely related to the emotional development of students what is primarily a duty of other socializing agents, such as family or peers. Students might think, that their emotions are private and that they should not be handled from another person in a public situation within a classroom.

- 2) What are the most important emotions in instruction from the view of teachers and students? Within theoretical approaches and related research on emotions and instruction, there are numerous types of emotions included (e.g., Jerusalem & Pekrun, 1999). The FEASP-approach postulated that only five special types of emotions should be dealt with (i.e., fear, envy, anger, sympathy, and pleasure). If, within the FEASP-approach, the wrong emotions are implemented, then instructional designers will not use this approach or students are not helped when having emotional problems. It is especially practically relevant that emotions are found which are important for both groups, teachers and students. If such emotions are found, then the probability of being used in daily instruction and of being successful in solving emotional problems is at maximum.
- 3) Are the instructional strategies proposed within the FEASP-approach really related to the corresponding emotions? The assignment of emotional strategies to emotions was originally based on basic research results and on theories, and not on the experience of instructional designers. If instructional designers do not relate instructional strategies and emotions in a way that is proposed by the FEASP-approach, then the educational practice would overrule the theoretical assumptions. In that case, the FEASP-approach could never be implemented and tested in daily instruction what would stop any meaningful research activities.
- 4) Are the FEASP-strategies used in daily instruction? Even when teachers stress the importance of emotions during instruction, it is not clear whether they integrate emotional strategies in their instructional activities. Teachers usually act under pressure, because they dispose of limited resources in time, attention, knowledge, etc. Based on this problem, teachers might only concentrate on the most important conditions for successful learning, i.e. instructional strategies influencing cognitive processes of the students. There is some chance that teachers cannot use emotional strategies, because they act under pressure. When these emotional strategies cannot be used, then the FEASP-approach does not make any sense in educational practice and related research.
- 5) Is there a relation between the application of the FEASP-strategies and the experience of certain types of emotions during instruction? If the hurdles connected to questions 1) to 4) are successfully taken, then it is still not sure, whether the FEASP-strategies can affect emotional experiences as proposed by the FEASP-approach. The effectiveness of the FEASP-strategies is an important issue for instructional designers, because in instructional practice only those strategies will be used that significantly help to solve practical problems.
- 6) In order to be able to properly answer the questions 2) to 5), a scale for measuring FEASP-strategies and -emotions has to be developed. It is an open question of what quality in respect to reliability and validity these scales are?

Within this paper, it is tried to answer these six questions based on descriptive sta-

tistical analysis of data from teachers' and students' questionnaires.

Method

Participants

The sample included $n=163$ Austrian school teachers and $n=53$ Austrian university students. 67 percent of the school teachers were female, 33 percent were males. The school teachers' ages range from 22 to 59 years with an average of 40 years. 34 percent of the teachers worked at primary schools, 18 percent at secondary schools, 25 percent at high schools, and about 6 percent at other schools (e.g., for handicapped students). Teachers were asked to take part in the study when they left school, after public meetings (e.g., teacher-parents-meetings), or during private meetings (e.g., parties) by research assistants. The student sample consisted of 45 females and 8 males with an average age of 25 years. 31 students attended a course in statistics and 22 students a course in instructional systems design at a department of educational research.

Instrumentation

Both, teachers and students had to answer a questionnaire including the following issues:

General importance of emotions during instruction. Teachers and students were asked to select one of the seven items depicted in Table 1. The items were ranked on a dimension from low ("emotions are not important ...") to high ("emotions are more important than anything else ...") importance.

Different types of emotions. The question "Which students' emotions should teachers consider during instruction?" was presented to teachers. Students were asked about which of their emotions should be coped with by the course instructor. Both, teachers and students were requested to state at least five different types of emotions.

FEASP-strategies. Short descriptions of the FEASP-strategies as depicted in Table

3 were used in teachers' and students' questionnaires. Teachers were also asked to estimate the importance of the FEASP-strategies for their daily instruction ("I use the strategy often, seldom, or never"). Students were asked, how often the FEASP-strategies were used in the course they were attending within the last two weeks (with the answer alternatives "never", "1-3 times", "4-6 times", "7-10 times", or "more than 10 times"). The number of items and the reliability coefficients (Consistency, Cronbach's Alpha) of the different sub-scales are shown in Table 4.

FEASP-emotions. Students had to state how often ("never", "1-5 times", "6-10 times", "more than 10 times") they experienced the five FEASP-emotions (fear, envy, anger, sympathy, and pleasure) during the course they were attending for the last two weeks. Each of the FEASP-emotions was measured with 8 items which were formulated by the author of the study considering the definitions of the emotions elaborated within the FEASP-approach (Astleitner, 2000). The reliability coefficients are shown in Table 4. Fear was measured with items such as "I had fear of failure" or "I was physically and mentally tensed up". Envy was measured with items such as "I found myself discriminated in comparison with other people" or "I was jealous". For measuring anger, items like "I was in rage about other people" or "I was aggressive" were used. For measuring sympathy, statements like "I experienced team spirit" or "I felt responsible for other students" were considered. Pleasure was measured by presenting statements like "I had fun" or "I was enthusiastic".

Procedures

Teachers were given a questionnaire together with a stamped envelope in the middle of a semester, and were asked to return it within a two weeks period. Also, students were given a questionnaire in the middle of a semester during an ordinary

course session. Students had 25 minutes to complete and return the questionnaire to the course instructor.

Results

Emotions and Their General Importance in Instruction

The FEASP-approach is dealing with emotions during instruction. The first question that has to be answered in order to evaluate the practical significance of this approach, is: how important are emotions within the process of instruction in view of teachers and students? If both groups find emotions as not being important within instruction, then the FEASP-approach is superfluous: there is no need for practical implementations and related research. In order to answer this question, teachers and students had to choose one of seven statements about the general importance of emotions within instructional settings (see Table 1).

Results indicate that teachers find emo-

tions as very important for instructional settings, because the development of human character depends on them (about 40 % of the teachers selected this statement). Nearly as much teachers (38.8 %) selected the statement that emotions are as important as cognitive and motivational processes. Also, students selected these two statements most frequently, but in reverse order: about 60 % of the students found emotions in instruction as important as cognition and motivation, and 34 % stress the importance of emotions for personality building. Overall, there is a slight tendency that emotions in instruction are more important for teachers than for students in our study (i.e., teachers selected more often the statement indicating the highest importance of emotions (48 % vs. 34 %)).

The statements most frequently selected by teachers and students clearly show the high importance of emotional processes in instructional settings what also represents a first evidence for the general importance of

Table 1
The General Importance of Emotions Within Instructional Settings

Statements	In View of teachers (N=163)	In View of students (N=53)
Emotions are not important in instructional settings, parents should deal with them at home.	1.3%	0.0%
Emotions are not important, because there are no emotional problems within instructional settings.	0.7%	0.0%
Emotions are sometimes important, especially when students are disturbing.	3.9%	3.8%
Emotions are important, but I am not interested in.	7.2%	1.9%
Emotions are as important as cognitive and motivational processes.	38.8%	60.4%
Emotions are very important, because the development of human character depends on them.	40.1%	34.0%
Emotions are more important than anything else, because emotions are the most significant experiences in life.	7.9%	0.0%

the FEASP-approach.

The Importance of Different Types of Emotions Within Instructional Settings

After having some data showing that emotions are important in instruction, the next validation step has to deal with the different types of relevant emotions. Referring to the FEASP-approach, it has to be clarified whether the emotions considered within the FEASP-approach (fear, envy, anger, sympathy, and pleasure) or other emotions are important during instruction.

To find out the importance of different types of emotions, first, teachers were asked with open questions (without any given answer alternatives). The teachers in this study reported 120 emotions that were classified according the FEASP-definitions of emotions (see Table 2). These classifications related the following terms to fear: anxiety, fright, dread, terror, anguish, shyness, aversion, timidity, alarm, excitement, and danger; to envy: jealousy, sense of justice, gloating, and rivalry; to anger: aggression, rage, hate, temper, fury, frustration, wrath, annoyance, violence, pressure, disappointment, trouble, and quarrel; to sympathy: love, affection, friendship, respect, caring for somebody, acceptance, empathy, group feeling,

loneliness, sense of responsibility, trust, and helpfulness; and to pleasure: happiness, joy, gladness, humor, and fun. All other terms stated by the teachers were classified as "other emotions or related terms".

Of course, this classification must critically be discussed. Some of the terms are not emotions, but they were seen as emotions by the teachers, so they were treated as emotions. Some of the terms can be related to other types of emotions, but there is an acceptable re-classification-reliability coefficient (i.e., 85 percent of the different terms were classified identically in a second re-classification).

Using the FEASP-definitions, most of the mentioned emotions by teachers were related to anger, then fear, sympathy, envy, and pleasure (i.e., 86.7 % of all nominations). Only 13.3 % of the stated emotions were not related to emotions included within the FEASP-approach.

These definitions and related classifications were also used to classify the emotions stated by students (see right part of Table 2). Multiple nominations were possible, so percentages of nominations do not add to 100 %. Students nominated fear and pleasure as the most important types of emotions in instruction: More than 40 % of the students

Table 2
The Importance of Different Types of Emotions Within Instructional Settings

Types of Emotions and Related Aspects	In View of Teachers (from overall $n=120$ [= 100%] open statements)	In View of Students (type stated by percentage of $n=53$ persons, multiple nominations possible)
Fear	26.7%	41.5%
Envy	5.0%	3.8%
Anger	41.7%	24.5%
Sympathy	12.5%	11.3%
Pleasure	0.8%	45.3%
Other Emotions	13.3%	9.4%
Sorrow		9.4%
Self-confidence		34.0%
Motivation		60.4%
Cognition		11.3%
Stress		18.9%

in our study stated these two emotions. In opposite to the data from the teachers, also the emotions and related terms not contained within the FEASP-approach were analyzed in detail. Results show that students nominated motivation, self-confidence, stress, cognitive variables, and sorrow as most important although not all of these terms are related to emotions from a research-based point of view.

In relation to the FEASP-approach, it has to be stated, that the emotions used within this approach of instructional design, are very important in view of teachers and students. Results also show that teachers and students differ in their importance nominations, especially in the case of the pleasure emotion. Also, self-confidence, stress, and sorrow seemed to represent emotion-related aspects that are important, but not considered within the FEASP-approach. Sorrow was excluded within the FEASP-approach

(see Astleitner, 2000), because it is closely related to depression what cannot be handled within instructional practice, but only from psychotherapy. Self-confidence is a variable that is more closely related to motivation and motivational design of instruction and not to emotional design of instruction (see the confidence-parameter in Keller's (1999) ARCS-model). Stress represents a mixture of cognitive, motivational, and emotional aspects which can only be handled by multi-dimensional instructional design approaches. There is a tremendous amount of literature of stress and stress management in instruction what makes stress an important issue. However, referring to the FEASP-approach, stress is a highly general concept which does not cover a wide range of emotions or emotion-related aspects, and which makes it difficult to connect basic research or applied research and related prescriptions for instructional practice.

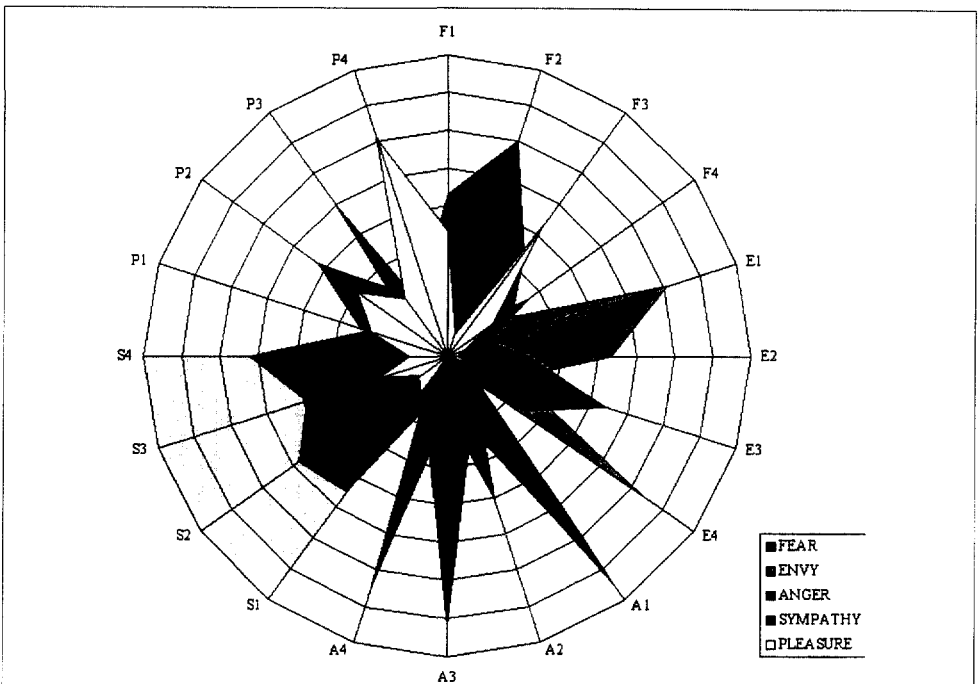


Figure 2. Web-diagram showing the assignment of FEASP-strategies to the FEASP-emotions (in view of $n=163$ teachers)

The Relation of FEASP-Strategies to FEASP-Emotions

When emotions and especially the emotions included in the FEASP-approach are important in instruction, then the next open question is, whether the FEASP-strategies are related to the postulated FEASP-emotions.

To answer this question, teachers were asked to assign one of the 5 types of FEASP-emotions to the 20 FEASP-strategies. Figure 2 shows within a web-diagram the results of this assignment.

The web-diagram is divided into 5 differently colored parts representing the 5 different emotions. For each strategy (F1 to P4), the highest percentage of assigned emotions are shown. For example, when looking the vertical line from F1 to the center of the web, an area is crossing this line after 3 units. Each unit represents 10 % of the teachers' assignments ranging from 80 % on the edge of the web to 0 % at the center of the web. For strategy F1, this means, that about 43 % of teachers assigned the fear-emotion. For F2, about 60 % of teachers assigned the fear-emotion. For F3, the highest percentage of assignment was not the fear-emotion, but the pleasure-emotion (for about 40 %). For F4, the highest assignment was the sympathy-emotion, and so on.

Overall, the web-diagram shows that, teachers assigned 2 fear-, 3 envy-, 2 anger-, 4 sympathy-strategies, and 1 pleasure-strategy to the emotions postulated by the FEASP-approach. In this way, 12 out of 20 strategies were classified as suggested from the FEASP-approach. The web-diagram also shows that the assignment is based on the highest percentage of selection by the teachers. The percentage varies considerably from 75 (for A1) to 24 (for P1) indicating that teachers have no common meaning about which strategy is related to which emotion.

The assignment of FEASP-strategies to FEASP-emotions was originally done within a theory- and research-based procedure, not

taking into account aspects from instructional practice. Now, the result presented within this section of the paper shows that 60 percent of the FEASP-strategies are assigned to the postulated FEASP-emotions by teachers. There is a good chance that a higher percentage is accomplished when teachers personally experience how the FEASP-strategies affect the FEASP-emotions. So, this result can be seen as a first significant evidence for the construct validity of the FEASP-approach within instructional settings.

The Frequency of FEASP-Strategies in Daily Instruction

As a next step within the validation attempt concerning the FEASP-approach, it has to be clarified whether the FEASP-strategies are really used within daily instruction. The FEASP-strategies and the whole FEASP-approach would not make any sense in instructional practice when all teachers already use them regularly or when no teachers can use them because of their complexity or the resources in time, effort, etc. which they require.

In order to find an answer, teachers and students within this study were asked, whether they used or experienced the FEASP-strategies within instructional settings.

Within Table 3, the percentage of teachers and students frequently using and experiencing the FEASP-strategies are depicted. Results show that about 21 % to 92 % of the teachers in this study used different FEASP-strategies often in daily instruction. The students of this study, which are not related to the teachers in any way, also experienced the application of the FEASP-approaches, but at a much lower level (with percentages ranging from about 2 % to 73 %). Of course, the answers of teachers and students cannot be compared directly, because both groups are differing in the type of education and in answer alternatives. But, in respect to the validation attempt of the FEASP-approach,

Table 3
The Frequency of FEASP-Strategies Application

Primary emotions	Instructional Strategies	% of $n=163$ teachers indicating strategy as "often used in daily instruction"	% of $n=53$ students indicating strategy as "observed more than 3 times within 14 days in daily instruction"
Fear reduction	F1 Ensure success in learning	92.3	45.3
	F2 Accept mistakes as opportunities for learning	75.2	73.6
	F3 Induce relaxation	21.8	3.8
	F4 Be critical, but sustain a positive perspective	64.1	60.4
Envy reduction	E1 Encourage comparison with autobiographical ...	59.2	13.2
	E2 Install consistent and transparent evaluating ...	84.8	49.1
	E3 Inspire a sense of authenticity and openness	86.1	53.8
	E4 Avoid unequal distributed privileges among students	75.2	52.0
Anger reduction	A1 Stimulate the control of anger	28.9	2.0
	A2 Show multiple views of things	75.8	57.3
	A3 Let anger be expressed in a constructive way	35.7	3.8
	A4 Do not show and accept any form of violence	88.0	15.2
Sympathy increase	S1 Intensify relationships	60.1	30.2
	S2 Install sensitive interactions	72.8	17.0
	S3 Establish cooperative learning structures	78.8	47.2
	S4 Implement peer helping programs	37.3	19.2
Pleasure increase	P1 Enhance well-being	62.7	13.5
	P2 Establish open learning opportunities	36.5	26.0
	P3 Use humor	84.0	40.8
	P4 Install play-like activities	46.5	7.9

it has to be stated, that the FEASP-strategies can be and are used within daily instruction. So, the FEASP-strategies are useable for educational practice and show therefore an acceptable ecological validity.

The Correlation Between FEASP-Strategies and FEASP-Emotions

When the FEASP-strategies are used in daily instruction, then the next question is, whether they can affect certain types of emotions during instruction or not. To answer this question, the students in our study were asked how often FEASP-strategies were used during their instruction and how intense they experienced the FEASP-emotions. Table 4 shows the reliability coefficients (Consistency, Cronbach's Alpha) and the number of items for each emotion- and each strategy-subscale.

The reliability coefficients range from 0.65 (measuring the application of fear-related strategies) to 0.89 (measuring the pleasure emotion) indicating acceptable reliability of the different FEASP-measurements.

The final row of Table 4 shows the correlation coefficient (r) and the significance level (p) of the level of experienced emotions and related strategies. There are significant correlations between sympathy- and pleasure-related strategies and corresponding emotions (r=0.60; r=0.47): When teachers often used sympathy- or pleasure-related FEASP-strategies, then the sympathy-

and the pleasure-emotions were high, as proposed within the FEASP-approach. The correlations for the fear- and the envy-components are also in a way which is proposed by the FEASP-approach: fear strategies reduce fear and envy strategies reduce envy, but not at a statistically significant level (p=0.190; p=0.090). The correlation between strategies and emotions postulated by the FEASP-approach cannot be found empirically in the case of the anger component. The correlation (r=0.18) means that the more often the FEASP-strategies concerning anger were used, the more often students experienced anger. This relation is not statistically significant (p=0.112), but does clearly not correspondent with the assumptions of the FEASP-approach.

Discussion

The purpose of this study was to validate a theoretical instructional design approach within instructional practice for the first time. Teachers and students were asked about the importance, the application frequency, and the relationship between instructional strategies and related emotions during instruction based on the FEASP-approach. Results show that emotions and especially the emotions considered by the FEASP-approach are important and can be used within instructional contexts. There is also some evidence that instructional strategies and emotions can be measured with

Table 4
Reliability Coefficients and Correlations Between FEASP-Strategies and FEASP-Emotions (47 < n < 52 Students)

	Fear	Envy	Anger	Sympathy	Pleasure
Consistency Emotion-Scale Items	0.85 (8)	0.69 (8)	0.68 (8)	0.85 (8)	0.89 (8)
Consistency Strategy-Scale Items	0.65 (4)	0.74 (4)	0.67 (4)	0.85 (4)	0.67 (4)
r	-0.13	-.20	0.18	0.60	0.47
p (1-tailed)	(0.190)	(0.090)	(0.112)	(0.000)	(0.000)

acceptable reliability and are related in a way proposed by the FEASP-approach in view of teachers and students: Nearly two thirds of the FEASP-strategies are classified according the corresponding emotions and four out of five strategy-emotion relationships are correlated as expected.

Based on these results, it can be suggested that further attempts to implement the FEASP-approach in daily instruction should be undertaken. The specification of these attempts should improve some of the shortcomings of this study (e.g., no experimental control of the FEASP-effects; little potential to generalize the findings due to the low number of subjects and a majority of female subjects; no multi-dimensional comparison of FEASP-effects; no Aptitude-Treatment-Interaction (ATI) analysis; or a need for a more comprehensive attempt to measure the validity of the measurements concerning strategies and emotions). Therefore, as a next step, teachers will be trained in applying the FEASP-approach, or at least, parts of it. Teachers then will have to use and vary the FEASP-strategies systematically within experimental or quasi-experimental controlled settings. FEASP-strategies will be implemented step-by-step, observing especially what will happen with students' emotions when different strategies are combined in daily instruction. Special attention will be given to the anger reducing strategies, because they did not correlate with the related emotions as expected within this study. As a first explanation of this finding, it is assumed that anger reducing strategies increase anger in a first period of time, because they address a lot of unpleasant issues. Based on this explanation, a more long-term observation of emotional processes within the classroom will be undertaken. Finally, an open question remains, how different FEASP-strategies and -emotions are related to learning and students' achievements. Although, there are a lot of open questions to be answered before the

FEASP-approach can be recommended for daily instruction, this study clearly supports further research activities focusing on this instructional design model.

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