Comment certaines pratiques enseignantes peuvent-elles affecter l’engagement et l’apprentissage des élèves?

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Engagement: A multidimensional construct

Engagement

- Behavioural: students' participation and involvement in school activities, academic, social or extracurricular

- Cognitive: psychological commitment in learning (e.g. use of learning and self-regulation strategies)

- Emotional: affective reactions to the school, teachers, academics and classmates (e.g. discrete emotions: enjoyment, anxiety, etc.)

Theoretical model

Classroom goal structures and emotional engagement: A multilevel approach

Noémie Baudoin & Benoit Galand

Review of the literature

- Mastery goal structure = task goal structure
  Learning, improvement and intellectual development are emphasized in the classroom

- Performance goal structure = ego goal structure
  Social comparison, competition and elitism are emphasized in the classroom
Review of the literature

- Kaplan and Midgley (1999)
  - Performance GS \(\rightarrow\) Negative affect
  - Mastery GS \(\rightarrow\) Positive affect

- Wang (2009)
  - Performance GS \(\rightarrow\) Depression
  - Mastery GS

Review of the literature

- Roeser et al. (1998)
  - Performance GS \(\rightarrow\) Mastery GS \(\rightarrow\) Emotional functioning

- Kaplan and Maehr (1999)
  - Performance GS \(\rightarrow\) Mastery GS \(\rightarrow\) Affect at school

- Gonida, Voulala and Kiosseoglou (2009)
  - Performance GS \(\rightarrow\) Mastery GS \(\rightarrow\) Affect in the classroom
Review of the literature

• Roeser, Midgley ans Urdan (1996)

![Diagram showing relationships between Performance GS, Mastery GS, Teacher-students relation, Positive school affect]

Inconsistent findings

Limitations of these researches

1. Goal structure measures
   • Individual perception of the goal structure
   • Possibility perceptions are contaminated by student emotional state
   • Relevance of classroom aggregated perceptions
   • Multilevel analyses relevant for goal structure studies (Kaplan, Middleton, Urdan and Midgley, 2002) but never used with emotional or affective outcomes.
Review of the litterature

- Inconsistent findings
- Limitations of these researches
  2. Conception of affective outcomes
     • Positive emotions aggregated
     • Negative emotions aggregated
     • Positive emotions and negative emotions (Reversed) aggregated
     • Symptoms
     • Different results with different conceptions
       (Frentzel, Pekrun, & Goetz, 2007; Galand & Philippot, 2005)

Aims of this research

1. Investigate trough a multilevel framework the effects of classroom goal structures on student emotional engagement.

1. Explore the effects of classroom goal structures on different measures of emotional engagement (discrete emotions and aggregated measure).
Methodology

▫ Sample
  • 887 Belgian French-speaking students
  • 7th – 12th grade
  • 12 – 21 years old
  • 53% of girls
  • from 55 classrooms

▫ Procedure
  • Cross-sectional study
  • Self-reported questionnaire

▫ Measure
  ▪ Student characteristics
    • Gender
      • (0 = girl, 1 = boy)
    • Grade
      • (from 7th to 12th)
    • Track
    • Retention
    • Socio-economic status (SES)
Methodology

- Classroom climate
  - Mastery goal structure
    - 5 items (α = .69)
    - e.g., "In this school, you can make mistakes as long as you are learning"
  - Performance goal structure
    - 4 items (α = .66)
    - e.g., "In this school, only few students can get good grades"
  - Teacher-students relationship
    - 10 items (α = .83)
    - Including teacher emotional support, teacher instrumental support, consideration of the students' point of view and justice

Methodology

- Class-related emotions
  « During last week, at school I felt… »
  (1= never, 7 = all the time)
  - Anger : « Angry / disgusted » (2 items, r = .51)
  - Boredom : « Bored » (1 item)
  - Anxiety : « Anxious / nervous » (2 items, r = .61)
  - Shame : « Ashamed / embarrassed » (2 items, r = .58)
  - Joy : « Joyful / happy » (2 items, r = .55)

- Negative affect: anger, boredom, anxiety & shame aggregated
Methodology

- Statistical analysis: Multilevel modeling

- Classroom-level
  - Contextual variables
  - Climate variables

- Student-level
  - Characteristics
  - Perception
Methodology

- **Statistical analysis**: Multilevel modeling

1. **Empty model**
2. **Model 1**
   - Gender
   - Perception of classroom climate (level-1, group-centered)
3. **Model 2**
   - + Contextual variables
     - (Grade, track, SES mean, retention ratio and gender ratio)
   - Only keep significant variables
4. **Model 3 (level-2)**
   - + Climate variables
   - Only keep significant variables

### Results

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<tr>
<th>ICC</th>
<th>Anger</th>
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<th>Anxiety</th>
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Discussion

- Between-classroom variations in emotional engagement
- These variations are not related to classroom composition, except grade.
- Specific behaviors from teachers are related to specific emotional reactions among students.
Grammatical spelling

- Cognitive processes involved
  - Application of an algorithmic rule (Fayol et al., 1999; Largy & Dédéyan, 2002)
    - E.g., IF the noun is plural
      THEN add the agreement mark at the end s
    - Transition between declarative to procedural knowledge
      - Process progressively faster
      - Suppression of some conscious indicators → reduction of the number of steps necessary

Grammatical spelling

- Children know the rules but do not apply them
  - Handwriting cost (Van Reybroeck & Hupet, 2009)
    - les notes ↔ les menus
  - Lexical spelling cost
    - les papas gérent ↔ les papas préparent

→ Practical implication
→ Offer them conditions (with low cognitive cost) in which they can automatize the rules
Students’ motivation

- Gradual automatization requires applying the rules repeatedly
  - Each application of the rule is voluntary and intentional
    → Need a personal responsibility

- Self-efficacy

- Which teaching practices may influence students’ self-efficacy?
  - Self-assessment
  - Feedback

Aim of the study

- Evaluate the efficacy of three teaching practices aiming to automatize the agreement rules and to increase self-efficacy

1. Cognitive cost progressively higher
2. Self-assessment with a writing guide
3. Progressive feedback on students’ performance
Method

- Participants

112 students from Third Year of Secondary School (Grade 9)

Table 1

<table>
<thead>
<tr>
<th>Intervention conditions</th>
<th>N</th>
<th>School 1</th>
<th>School 2</th>
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Table 2

<table>
<thead>
<tr>
<th>Intervention conditions</th>
<th>N</th>
<th>Non verbal IQ (Raven)</th>
<th>Reading (ECL-Collège)</th>
<th>Spelling (Chronodictées)</th>
<th>Age (in years)</th>
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<td>15.00</td>
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<td>77.91</td>
<td>37.26</td>
<td>14.83</td>
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Test Tukey: n.s.
Method

• Procedure
  • Pre- and post-test given by teachers
  • Correction by another teacher
  • Interventions carried out during 8 lessons over 2 months

  1. Cognitive cost intervention
     • Identification of pp in a text and recall of the agreement rule
     • Completing the agreement marker and link with the noun/pronoun
     • Completing the verb and link with the noun/pronoun
     • Sentences production including pp
     • Text production, completing three pp mixed, text correction

  2. Self-assessment intervention
     • Writing and proofreading guide, created by each pupils
     • Adapted to their own difficulties, needs
     • Pupils invited to use their guide during exercises and at the end to check their work
Method
Method

3. Feedback intervention

- Performance in each exercise through coloured circles (green, orange or red)
- Feedback on their progress and inform on exercises still to finish

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33
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Method

- Measures
  Automatization in spelling evaluated by the comparison between three DV
  - Spelling: specific exercises
    - Form the pp from verb given in the infinitive
    - 15 pp alone, 15 pp with *avoir* (to have), 15 pp with *être* (to be)
  - Spelling: transfer in dictation task
    - Text production under dictation
    - Higher cognitive cost to manage the sentence, the lexical spelling, etc.
  - Spelling: transfer in text production task
    - Free text production of around 250 words
    - Inspired by pictures
    - Higher cognitive cost to manage the ideas, the discursive structure
Method

• Self-efficacy (Galand et Hospel, 2011)
  • Likert 4 point scale
    • Je pense que je suis doué en orthographe
      (I think I am good at spelling)
  • Reliability (alpha Cronbach): 0.74

Results

▪ Hyp 1. Cognitive cost

Table 3: Self-efficacy and performance in spelling by intervention conditions on pre- and post-tests

<table>
<thead>
<tr>
<th></th>
<th>Self-assess/ FB</th>
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<td>Spelling: exercise-1</td>
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<td>7.00 (5.50)</td>
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<td>8.37 (3.59)</td>
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Note: -1 = pre-test; -2 = post-test; SE = Self-efficacy

→ Progress in specific task ($F(1,51) = 6.40; p < .01, \eta^2 = .11$)
→ Transfer in dictation task ($F(1,51) = 9.49; p < .001, \eta^2 = .16$)
→ Indication of automatization in dictation task
Results

▪ Hyp 2. Self-assessment

Table 3

Self-efficacy and performance in spelling by intervention conditions on pre- and post-tests

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SE-2 17.57 (2.38) 18.03 (2.20) * 16.22 (3.70) 18.83 (4.20) 18.26 (3.77)

Note: -1 = pre-test; -2 = post-test; SE = Self-efficacy

⇒ Little progress in specific task (p = .08)
⇒ Triple interaction time*self-assess*FB (p = .08)
⇒ Transfer in free text production (F(1,51) = 9.49; p < .001, η² = .16)
⇒ Progress in self-efficacy (F(1,51) = 4.11; p = .04, η² = .05)
⇒ Indication of automatization in free text production

Results

▪ Hyp 3. Feedback

Table 3

Self-efficacy and performance in spelling by intervention conditions on pre- and post-tests

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Spelling: test-1 9.67 (3.38) 13.10 (3.19) 7.39 (2.36) 8.39 (2.69) 9.48 (2.68)
Spelling: test-2 12.95 (6.08) 19.00 (4.55) *** 10.96 (4.48) 10.23 (5.55) 15.28 (7.17)
SE-1 14.96 (3.09) 15.50 (4.95) 14.72 (3.28) 17.28 (5.25) 17.53 (7.78)
SE-2 17.57 (2.38) 18.03 (2.20) * 16.22 (3.70) 18.83 (4.20) 18.26 (3.77)

Note: -1 = pre-test; -2 = post-test; SE = Self-efficacy

⇒ No significant progress
Discussion

- Cognitive cost
  - Intervention benefits in specific task and in dictation task (transfer)
    - First degree of automatization
- Cognitive cost and self-assessment
  - Intervention benefits in free text production and in self-efficacy
    - Second degree of automatization
- Self-assessment guide lead pupils to be agent of their learning

Discussion

- Feedback
  - Does not seem to be determinant
  - Why?
    - Performance feedback instead of strategy feedback
- Being agent at the heart of learning
- Combine cognitive and motivational study
Are both autonomy-support and structure really important for engagement and learning?

Hospel Virginie, Galand Benoît, Wattiez Manon

How to support engagement and learning?

Self-determination Theory (Deci & Ryan, 2000):

Social context more or less supporting

Satisfaction of psychological needs

Engagement

Learning
Which dimensions of the social context?

- **Autonomy-support (vs Control)**
  
  = supporting students to endorse and pursue their own goals, and creating congruence between the students’ inner motives and the classroom activities
  
  ➢ Through choices, rationales for mandatory activities, interesting and relevant activities, taking students’ perspectives, avoiding the use of control (e.g. pressures, controlling language, etc.)

  (Assor, Kaplan & Roth, 2002; Reeve, Jang, Carrell et al., 2004; Skinner & Belmont, 1993)

- **Structure (vs Chaos)**
  
  = amount and clarity of information given to students about the way to achieve teacher’s expectations and desired educational outcomes
  
  ➢ Through communication of expectations, guidance during the activities and feedbacks

  (Jang et al., 2010; Reeve, 2002; Skinner & Belmont, 1993)

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**Autonomy-support**

- The focus of most available studies

Effects found on:

- **Engagement: cognitive, emotional and behavioural**

  (Assor et al., 2002; Jang, 2008; Reeve, Jang, Carrell, Jeon, & Barch, 2004; Shab, 2008; Vansteenkiste et al., 2004)

- **Learning, but contradictory findings:**
  
  – Autonomy-support > Control

  (Cordova & Lepper, 1996; Vansteenkiste et al., 2004)

  – Low autonomy-support > high autonomy-support

  (Furtak & Kunter, 2012)
Structure

- Less investigated in the framework of the SDT

Effects found on:

- Engagement (Sierens et al., 2009; Skinner & Belmont, 1993; Wang & Eccles, 2013)
- But not investigated on learning

However, other fields of research stress its importance for learning

(e.g. Educational Effectiveness, Cognitive Load Theory)

Limits

Autonomy-support and structure = orthogonal dimensions

(Jang et al., 2010; Sierens et al., 2009)

- Disentangle the effects of autonomy-support and structure
- Relative weight of autonomy-support and structure?
- Additive or moderator effects?
What is the most efficient?

- Providing autonomy-support?
- Structuring the activities?
- Both?

Objectives

Manipulate the provision of autonomy-support and structure
→ to test their effects (main effects and interaction) on engagement and learning
Method

Sample:
82 university students (first year in psychology)
M age = 19.5 years old
85 % of girls

Procedure:

Consent form  Previous knowledge  Task  Engagement questionnaire  Learning questionnaire  Debriefing

Content: (partial) correlation, linked with statistics course.

Randomly (counterbalanced order) assignment according to a
2 (low vs. high autonomy-support) X 2 (moderate vs. high structure) between participants design.

Manipulations (1)

<table>
<thead>
<tr>
<th></th>
<th>Low autonomy-support</th>
<th>High autonomy-support</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Rationale</td>
<td>Controlling: students have to know correlation</td>
<td>About the interest for a psychologist to know correlation</td>
</tr>
<tr>
<td>2. Choice</td>
<td>No choice</td>
<td>Choice between exercises related to different fields of Psychology</td>
</tr>
<tr>
<td>3. Students’ interests</td>
<td>Examples not related to the field of psychology</td>
<td>Examples related to psychology</td>
</tr>
<tr>
<td>4. Avoiding control</td>
<td>Controlling vocabulary (« you have to »)</td>
<td>Autonomy-supportive vocabulary (« you could »)</td>
</tr>
</tbody>
</table>

(Jang et al., 2010; Katz & Assor, 2007; Skinner et Belmont, 1999; Vansteenkiste et al., 2004)
Manipulations (2)

<table>
<thead>
<tr>
<th></th>
<th>Moderate structure</th>
<th>High structure</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Expectations</td>
<td>Global and vague</td>
<td>Clear and detailed</td>
</tr>
<tr>
<td>2. Guidance</td>
<td>Explanations in one go</td>
<td>Explinations given step by step</td>
</tr>
<tr>
<td></td>
<td>Important information not highlighted</td>
<td>Important information highlighted</td>
</tr>
<tr>
<td></td>
<td>All the exercises provided at the end of the task</td>
<td>Exercises provided after each example</td>
</tr>
<tr>
<td>3. Feedbacks</td>
<td>Feedback in one go</td>
<td>Feedback provided step by step</td>
</tr>
</tbody>
</table>

(Reeve, 2006)

Measures

1. **Control variables:**
   - Previous knowledge, gender, maternal tongue and high school grades

2. **Manipulation-check:**
   - Autonomy-support («I had the opportunity to choose exercises which interested me»)
   - Structure («The task was structured»)

3. **Engagement:**
   - Emotional (positive and negative emotions)
   - Cognitive (deep processing)

4. **Apprentissage:**
   - Multiple-choice questionnaire about the content of the task
Results

• **Control variables:**
  ➢ No significant differences between groups
  (Previous knowledge, gender, maternal tongue and high school grades)

• **Manipulation-check:**
  ➢ Perception of autonomy-support higher in « high autonomy-support » conditions
  ➢ Perception of structure higher in « high structure » conditions

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Engagement

• **Main effect of structure on**

Positive emotions
\( F(1, 81) = 4.78, p < .05; \eta^2 = .06 \)

Cognitive engagement
\( F(1, 81) = 7.08, p < .01; \eta^2 = .08 \)

In « high structure » conditions, participants reported more engagement

• No significant effect of autonomy-support, no interaction
Learning

• Main effect of structure \( F(1, 81) = 6.85, p < .05; \eta^2 = .08 \)

• No significant effect of autonomy-support, no interaction

In « high structure » conditions, participants learned more

Discussion

• Importance of structure for learning
  – For cognitive (ex. Cognitive Load Theory)
  – But also motivational (engagement) reasons

• No effects of autonomy-support
  – Task complexity, participants selection ?
  – Take structure into account to estimate the specific effect of autonomy-support (cf. Furtak & Kunter, 2012) !
Discussion

• No effects on negative emotions
  – Floor effect, manipulation = low autonomy-support (instead of control)

➔ Importance of structure, especially in case of complex, abstract tasks which require previous knowledge

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Theoretical model

References


Thank you for your attention!

Do you have any questions?

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