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## Concept-Cartoons as a Tool to Evoke and Analyze Pupils Judgments in Social Science Education

The following contribution makes an effort to place the concept-cartoon-method into the context of social science education. Concept-cartoons (CCs) enable teachers to use the everyday life experiences and individual thoughts of the pupils as a positive enrichment tool within the learning processes. In this context, CCs are very suitable to function as a method to gain information about both the existing mental conceptions and the individual political judgment strategies. Through this, it is possible to put everyday life concepts and scientific knowledge in a constructive relationship, which finally enhances new learning objectives.

First the article highlights the relevance of pupils' and teachers' concepts for judgment processes. On this basis the method of CCs is introduced and evaluated.

Der folgende Artikel beschäftigt sich mit den Möglichkeiten des methodischen Einsatzes von Concept-Cartoons im Rahmen sozialwissenschaftlichen Unterrichts. Als Instrumentarium zur Diagnose von Schülervorstellungen und individuellen Urteilsstrategien, bieten Comic-Cartoons den Lehrkräften die Möglichkeit, den Unterricht entlang dieser lernrelevanten Perspektiven zu gestalten. Durch die konstruktive Verknüpfung von Alltagskonzepten und Fachkonzepten können auf diese Weise neue Chancen für nachhaltige Lehr- und Lernprozesse erschlossen werden.

Innerhalb dieses Beitrags wird zunächst die Bedeutung von Schülervorstellungen und vorfachlichen Urteilsstrategien für wirksamen sozialwissenschaftlichen Unterricht geklärt. Im Anschluss erfolgt eine Einführung in die Methode „Concept-Cartoons“. Abschließend werden exemplarisch drei von den Autoren gestaltete Cartoons vorgestellt.

### Keywords

Concept-Cartoon, pupils' concepts, teacher's concepts', judgment processes, judgment strategies, social science education

### 1. Concepts in the Context of Judgments Learning Processes

#### 1.1 Pupils' Concepts in the Context of Judgments Learning Processes

The relevance of individual ideas and concepts for the process of scientific learning is almost indisputable. Everyone builds up ideas about certain parts of life and constructs their own individual reality (cf. Klee; Lutter 2010). These various ideas (also known as everyday life theories, subjective theories, lay theories) are closely associated to the physical and social environments people are confronted with. Those individual concepts are very stable and therefore hard to change. In the context of educational processes, the individual concepts are expressed through different judgments and judgment competencies. Usually those subjective judgment strategies are strongly linked to the following characteristics:

- Subjective concernment (How does the issue affect me?)
- Individual interests and needs (Of what use to me is a political decision?)
- Abstract ethical standards (Do I agree or disagree with an outcome?)
- Ideological conception of the world (How does a particular decision correspond to my political orientation/opinion?)

- Affinity and trust in certain persons (How does a certain politician appeal to me?) (cf. Massing 1997, 116)
- The above mentioned circumstances accentuate the problem of building up scientific judgment strategies and an adequate knowledge in the field of social sciences, among the students. Problems occur in particular when existing concepts and judgment competencies are disqualified or even excluded from learning processes. Everyday life concepts then often remain as most important constructs of judgment and interpretation, even after social sciences instructions have taken place (cf. Schnotz 1998, 77). Permanent and one-sided urges on rational, reasonable decision-making processes are therefore highly counterproductive for substantial learning processes. Rather must be assumed that a competent judgment arises out of various preceding acquisition processes. In this regard, educational processes always have to provide sensuous, physical and emotional approaches for the students (cf. Meyer 1992, 511). Otherwise the feeling is spread, that the gained knowledge is only useful for school, but irrelevant for "real life". A close connection between the everyday life concepts and the scientific concepts are therefore an essential necessity for sustainable learning processes. "In the most general sense, the contemporary view of learning is that people construct new knowledge and understanding based on what they already know and believe" (Bransford among others 2000, 10). Acknowledging this, it is necessary to figure out, in which learning sequences, forms and arrangements students are able to articulate their ideas, pre-perspectives and question re-



garding politics and society (cf. Schelle 2005, 87). In this way, the individual concepts become a significant structure-giving element of planning, teaching and reflecting socio-scientific lessons (cf. Lutter 2011, 98).

## 1.2 Teachers' Concepts in the Context of Judgments Learning Processes

Latest research results (Klee 2008) illustrate, that the development of political judgment strategies is a key problem within the context of social science teaching. Research results show that teachers have enormous problems to integrate both student-centered and scientific-orientated ways of teaching. In regard to this dilemma, teachers often tend to make a very uncomfortable decision for only one side. When teachers avoid scientific-orientated educational processes they are driven by the fear of promoting low quality political judgments among the pupils or even reproduce current opinions. Otherwise, when scientific orientated teaching is dominating they are afraid to discourage pupils and at the end avoid learning processes.

The key issue in this context however, is the question, which scientific or professional concepts are appropriate to absorb and integrate pupils' concepts in a positive and constructive manner, regarding the understanding of political processes? The primary role of didactics in this context is to reconstruct professional concepts in terms of their importance for learning processes among pupils. Learning in this sense is meant as an extension, change or reconstruction of a mental conceptual system (cf. Sander 2005, 52). The main objective then, is not to replace the pupils' concepts, but to create a learning environment in which different forms of knowledge are experienceable and understandable (cf. Grammes 1998, 62 ff). Pupils concepts are therefore necessary "bridge pillars" for lasting learning achievements and of great importance for didactic conceptions. In order to ensure productive learning processes, it is important to mark everyday life concepts as a starting point and to create dissonances, as the learning process progresses. The resulting imbalances then promote fundamental learning and thinking procedures. Overall it seems to be an important challenge to develop a practice tool which on the one hand enables teachers to identify the existing concepts of the pupils and on the other hand helps to overcome the barrier between student and scientific centered ways of teaching. In the following text CCs are suggested as well as verified as such a "both-sided tool".

## 2. Concept-Cartoons as an Approach to Pupils' Social Science Conceptions and Misconceptions

Concept cartoons (CCs) first developed by Keogh and Naylor (1997) are a highly visual and stimulating approach to teaching and learning. They are based on a

constructivist view on learning, in which learner's existing concepts influence their future learning (cf. Sewell 2002). Within CCs discussions between individuals are presented in a cartoon-style format. Learners are invited to observe the expressed statements within. Furthermore they are supposed to decide which view they support and why they do so (cf. *ibid.*). CCs represent specific scientific ideas related to personal experiences. As a consequence learners are able to establish connections between scientific ideas and their everyday life experiences. CCs like the „Snowman“ (see Fig. 1) are usefull to initiate discussions and to make learners ideas explicit.

Fig. 1



Figure 1 Snowman: (Source: <http://www.conceptcartoons.com/science/subway-1.htm>)

Several case studies are illustrating teacher perceptions of the outcome of CC in science classes. Although those teachers used CCs in different ways similarly results are reported (cf. Morris et al. 2007):

- CCs are providing a stimulus for discussion  
Teachers have experienced CCs as an opportunity to explore pupils' concepts and to provide a stimulus for discussions without necessarily restricting the students' ideas to only those illustrated in the cartoons. The discussions have provided a forum for the students to change and develop their ideas. According to the teachers' statements students posed additional questions which have provided a foundation for further investigation to develop pupils' scientific ideas.
- CCs are providing a context and purpose for broader surveys

The teachers have pointed out that the use of common everyday experiences represented in the CCs allowed the students to readily link to their personal life. In this linkage has been found occasion for performing a deeper scientific-based analyses. Hence, the cartoon has provided both a context and purpose for discussion, which established an actual need for investigation.

- CCs are providing a motivating environment for investigations

Teachers have put pupils' active participation down to the clearly established purpose for performing the investigations. Furthermore pupils have considered the investigations as worthwhile and meaningful. In ad-

dition the pupils have been able to emphasize with the characters in the CCs.

### 3. CCs in Social Science Education – Theoretical Assumptions

In natural science education CCs are an already well established teaching and learning strategy (cf. Barke et al. 2009). The findings of Morris et al. suggest that CCs can be a meaningful instrument for social science lessons as well. Without any doubt the advantages of CCs like initiating discussions, engaging in investigations and motivating pupils, are valuable for social science classrooms education, too. But so far, the potentials of CCs are more or less idle. In the following an effort is made to transfer CCs into social science learning. CCs within social science education need to build a communicative frame that evokes political judgments. In order to realize this objective CCs should on the one hand always refer directly to an everyday life situation and on the

other hand represent possible scientific views. The given statements and represented situation within the CC should furthermore fulfill the requirements of controversy. Through this, CCs inevitably lead to a reduction of content. The presented situation and the given statements therefore represent only one possible perspective on the specific issue. The intentionally chosen thematic emphasis however should also point towards one of the two fundamental political “lines of conflict” concerning Freedom vs. Equality or Liberty vs. Security, which can be derived from the four normative dimensions of statehood (security, legal equality and legally guaranteed freedom, political self-determination, social welfare) presented by Zürn et al. (2004, 6). In an effort to negotiate and solve these fundamental conflicts, policy implements certain decisions, which can be concretized through certain exemplary cases. These cases are the basis for the construction of CCs (cf. Fig. 2 and Tab. 1).

Fig. 2



It may be assumed that within teaching practice CCs can be used as a tool to provoke and analyze pupil’s judgements in three different phases of instruction. In every of those three phases it is possible to provoke different statements which have then different consequences for teacher’s actions (see table below).

Tab. 1

Phase of instruction	Forms of statements	Teacher action
Introduction	Viewpoint conditions	Planning
Development	Judgment strategies	Feedback
Consolidation in results/ Transfer	Decision making	Evaluation

The different forms of statements can be analysed through the following key questions:

#### Viewpoint conditions

To find out and relate different individual ideas:

Which individual ideas are shown through pupils’ comments on the CC? How can they be related with each other?

To identify unbalanced opinions and judgments:

Which statement in the CC is preferred by the pupils?

To identify the professional starting points:

Which argumentative starting points connected with concepts are indicated in pupils’ opinions?

#### Judgment strategies

To identify the integration of scientific content knowledge:

Which scientific concepts do the pupils integrate in their interpretation of the CC?

To identify lesson-caused misunderstandings:

Which academic concepts mediated so far increase objective conclusion mistakes?

To identify learning potentials:

At which point can learning potentials be identified and how can they be used for the differentiation of pupils’ concepts?

#### Decision making

To determine concept changes:

What distinguished the decisions which were expressed at the beginning of the teaching and learning unit?

To make the progress of learning transparent:

Which competency development of the individual opinion finding is recognizable?

To point out transfer opportunities:

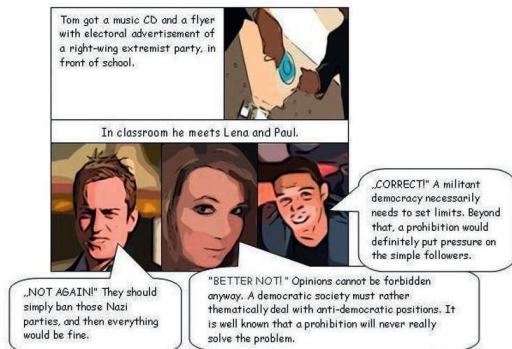
How can the new growth in opinion finding be used for another political controversy in general?



#### 4. CCs in Social Science Education – Empirical Approximations

In order to evaluate the relevance of CC's in the context of social science education, the CC "party ban" (as listed below) was introduced and tested within three different groups of learners (political science classes, eleventh grade). Afterwards the anonymously given statements (55 in total) were systematically analyzed.

**Fig. 3 Concept-Cartoon (Party ban)**



The central objective of this small empirical study was to identify the different viewpoints of the pupils regarding the issue "party ban". For this reason the CC was brought in at the beginning of the teaching unit (phase of introduction). The results clearly showed that the introduced cartoon had a structure building effect on the statements of the pupils. The situation, illustrated within the cartoon, had been taken up and developed further by the pupils. In other words, the cartoon was the central frame of reference for the statements the pupils made. This recognition clearly shows that it is of great importance, to comprehensively evaluate the cartoons, before they are introduced into the educational practice. It is therefore extremely important to examine the situational context as well as the thematic content which is represented through the illustrated persons. In this specific cartoon, an effort is made to transfer the controversial political discourse concerning party bans. The discussion on party bans is one exemplary case to concretize the laws freedom of expression and (Article 5, Basic Law FRG) and political parties (Article 21; Basic Law FRG) with reference to the everyday life of the students. (cf. Tab. 2):

**Tab. 2**

Fundamental political conflict line	Implementation of politics	Concretization
Liberty vs. Security	Freedom of expression (Article 5, Basic Law FRG) Political parties (Article 21; Basic Law FRG)	Case "party bans"

The intentionally selected localization had a profound impact on the given statements. Numerous statements refer exclusively to the institutional opportunities that schools have regarding the problem of right-wing-parties.

Exemplary statements:

- "Tom should bring both the CD and the flyer to the school secretary. There is no entitlement for parties to advertise in front of schools. I believe the recruiting procedures of the parties should be observed and they should be stop if they start to advertise in front of schools. In that case, the responsible authority should be informed. [Tom sollte die CD und den Flyer im Sekretariat abgeben. Da es einer Partei nicht erlaubt ist, so Werbung zu machen (also vor Schulen). Ich denke, man sollte darauf achten, wie die Partei Mitglieder wirbt und sie stoppen, wenn es um Schulen geht. Es sollte der Behörde gemeldet werden.]
- "Election advertising in front of schools should be banned (not only right-wing advertising)" [Wahlwerbung vor Schulen verbieten (nicht nur Rechtsradikale)].
- "That is pure electoral advertisement! Political party advertising should only be allowed on neutral terrain, for example marked squares. This will assure that the advertising is not intentionally addressed at a particular group". ["Wahlwerbung pur! Parteiwerbung sollte nur auf 'neutralen' Plätzen, wie z.B. auf einem Marktplatz stattfinden dürfen, damit nicht nur auf bestimmte Gruppen, wie z.B. Schüler abgezielt werden kann."]

The above mentioned statements clearly illustrate the close connection between the given statements of the pupils and the situational content shown within the cartoon.

An even greater relevance however unfolded the thematically statements articulated by the concept-cartoon-actors:

**Tab. 3**

Tom	Lena	Paul
A complete ban would end right-wing propaganda.	Opinions cannot be forbidden.	A ban puts pressure on the simple followers.
	A democracy needs to respect controversial positions.	A democracy needs to set clear limitations

The results of the tests clearly show that Concept cartoons must be understood as an impulse that guides students to content-specific reasoning. Upmost in dealing with contextual statements of con-



cept cartoons is therefore not only “what the pupils’ say” but also how they deal with the offered information’s (content and situation). These insights enable teachers to carry out pupil-centered didactic reductions regarding the educational content. In this way the topic “party ban” offers a plethora of educational approaches. The introduced and tested CC concentrates its focus on the pros and cons of party bans and, as already noted, on the underlying political controversy regarding security versus liberty. This intentionally chosen orientation was also adopted by the broad majority of the pupils. The pupils argued primarily within three different conceptual figures:

#### **4.1 Figure 1: Democratic Principles: Freedom of Speech as a Fundamental Cornerstone**

##### *Explication*

The pupils argue that a ban of the NPD would violate basic standards and values of a democratic society and political system. Freedom of speech is identified as a right, which is characterized by its universal validity. A limitation of this essential right through institutional arrangement is therefore not acceptable. The possibility to vote for right-wing-parties must be acknowledged as a legitimate component within the democratic framework, even if the particular party pursues anti-democratic aims.

##### *Exemplary statements:*

I don’t think a ban would be the right decision. There is freedom of speech and everyone should be free to decide, who he wants to vote for. [Ich denke, ein Parteiverbot wäre nicht die richtige Entscheidung. Es herrscht Meinungsfreiheit und jeder kann frei wählen, wenn er wählen möchte].

“A prohibition against right-wing parties is not the right decision and additionally not legitimate. It would violate the fundamental right of freedom of speech”.

[Ein Verbot gegen rechtsradikale Parteien wäre einmal zu einfach und zweitens unmöglich. Es würde gegen die Grundrechte verstoßen, seine Meinung und eigen formulierte Ansichten öffentlich kund zu tun].

I think because of the existing freedom of speech and democratic political basis, a party ban should not be executed.

[Ich denke, dass aufgrund der vorhandenen Meinungsfreiheit und demokratisch politischer Grundlage, ein Parteiverbot nicht vollzogen werden sollte].

#### **4.2 Figure 2: Institutional Intervention: Bans as a Legitimate Political Instrument of Strong Democracies**

##### *Explication*

According to the pupil’s statements, parties should be banned, if they violate against fundamental demo-

cratic standards and regulations. For them it is therefore necessary that democratic political systems combat antidemocratic parties with everything that the rule of law offers. The pupils feel committed to the principles of a strong democracy. In this context antidemocratic aims and indoctrinating tendencies are legitimate reasons for party bans.

##### *Exemplary statements:*

“Parties should not be banned as long as they act democratically. Actions and opinions, however, which suppress people, should not be tolerated. If they act against the public wealth they should be banned”.

[Parteien sollten nicht verboten werden, solange sie demokratisch handeln. Wenn es jedoch Meinungen und Sichtweisen gibt, die andere Menschen unterdrücken oder gefährden, sollte man das nicht akzeptieren. Allein schon wegen des Allgemeinwohls dagegen vorgehen und sie notfalls verbieten].

“I think right-wing parties like the NPD should be banned, because their interests violate the essential rights within the constitution. Furthermore, it is quite obvious, that they would to reestablish Nazi Germany and deport all foreigners”.

[Ich finde, dass man rechtsradikale Parteien wie die NPD verbieten sollte, da sie verfassungswidrig sind und aus ihren internen Parteiziele klar hervorgeht, dass sie bei einer Machtübernahme ein 4. Reich wollen und alle Ausländer abschieben wollen].

“Something has to happen! Nazi parties must be banned. Too many young people can be influenced in this political direction”

[Es muss wirklich etwas passieren! Nazi-Parteien müssen verboten werden. Zu viele Jugendliche lassen sich in diese Richtung beeinflussen].

#### **4.3 Figure 3: Enlightenment through Education: The Strengthening of Democratic Subjects**

##### *Explication*

The pupils underline the problem of political manipulation through right-wing advertising. Thus, the addresses are at the heart of their arguments. They emphasize the necessity of education as most important preventive measure against right-wing ideas and the recruiting procedures of right-wing parties.

##### *Exemplary statements:*

“Even if those parties would be banned, that doesn’t mean that everything is fine! They should pay attention to this problem, especially at schools. The students should be informed so that they are not affected by such actions”. [Selbst wenn die Parteien verboten werden würden, heißt das nicht, dass dann alles super ist! Wichtig ist, dass gerade in Schulen aufgepasst wird, mit den Schüler/innen gesprochen wird und dass die Schüler/innen aufgeklärt werden, um aus eigener Kraft nicht von solchen Aktionen beeinflusst zu werden].



“I believe that it is not right to ban parties, because it would violate the right of free speech. In addition a ban is not appropriate to solve the problem of right-extremist-ideas. I think education would have a greater effect”.

[Ich glaube es nicht richtig ist, Parteien zu verbieten, damit würde ja die Meinungsfreiheit verletzt werden. [...]. Außerdem würde ein Verbot nicht die rechtsradikalen Gedanken beseitigen! Ich denke, dass Aufklärung mehr bewirken kann].

“It is important to prevent children from being drawn into a right-wing political ideology. If the children are informed, such CDs cannot harm or influence them. Then it will eventually stop.”

[Es ist wichtig zu verhindern, dass Schüler und Schülerinnen sich von so einer CD “nach rechts lenken lassen” anstatt die an sich so oder so verbotene Übergabe an Schulen. Schüler/innen aufklären! Wenn so niemand erreicht wird, dann hört es auf].

Assuming that the identified statements can also be found in other classes, teachers have several possibilities to adapt to this. In the case that one-sided arguments dominate, teachers can respond to the unbalanced positioning by bringing in material that emphasizes a completely opposite perspective. The intentionally created dissonance then can be used as a starting point for learning processes. If most of the given statements remain on a rather personal and less complex level, the teachers can bring in material or evoke discussions that point out the political and social dimension of the particular issue. In both cases an increase in complexity regarding the pupil’s concepts can be achieved.

## 5. Summary and Future Prospects

It has been shown that CCs may take over several important roles in social sciences education. In general they prove to be a functional tool to support teachers in giving pupil- as well as subject-orientated instructions. This opportunity lies in a connection between a certain practical situation and its scientific context. Within the example elaborated above it can be substantiate what Morris et al. (2007) have shown in the case of natural sciences regarding learning-processes in social sciences:

CCs represent a seminal starting point concerning the controversy of banning a party. Pupils are positively encouraged to form an opinion – not at least due to a drawn from life situation.

Essential subject-based debates can be looked at from the angle of a comic. Founded in this possibility every day life problems and scientific aspects get connected.

To access a subject-based topic from an everyday-life-base boosts pupils interest and motivation. They are experiencing that scientific contents are relevant not only for everyday life but for their own everyday life. This act motivational in general learning contexts as well.

Beyond these benefits using CCs succeeds in regard of the expected analytic function concerning lesson’s beginning (see tab. 1). It was possible to identify various arguable dimensions of pupils by using a CC. Those may be used by teachers for further scheduling. Those are encompassing:

- the emphasis of a democratic and liberal belief in politics
- the substantiation of the possibility of banning as an instrument of institutional defense
- an enlightened perspective of democratic capability.

Pupil’s concepts illustrated here may be used in different parts of a lesson- structure. Additionally knowing those concepts enables evaluation of position and attitudes of pupils towards a deeper engagement, for instance in the process of finding counter-arguments or a differentiated perspective. As well CCs give the opportunity to present and discuss individual statements in the classroom.

At this point of time CCs are not fully developed diagnostic instruments. But the given example shows that they have potential to do so. In the future more CC must be proved and accompanied by scientific methods. Upcoming challenges are:

- to develop and prove CCs within other social science topics
- to prove the CCs in different phases of instruction
- to encourage teaching experiments regarding pupils concepts identified by CCs.

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