Bulletproof from delivery to interactivity when teaching with PowerPoint

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Abstract: PowerPoint slideware is one of the dominant tools in higher education. During more than two decades of pervasive use, little effort has been made to innovate and refrain from default slides and templates. This paper elucidates on how the effective use of PowerPoint can facilitate improved educational practices. Supported by the relevant empirical evidence, it is concluded that the use of the slideware goes hand in hand with little reflective deployment, also in education. On the basis of the literature, relevant principles of ‘how to do’ slides and ‘what to do with’ slides are derived. As these are insufficient to overcome the criticism that presentation ‘delivery’ regularly remains a one-way street, results from an explorative workshop are presented which allow for innovative, constructivist didactics in interactive sessions with PowerPoint. To provide a platform for further innovation, the findings are structured according to the cognitive domain of Bloom’s taxonomy.

Keywords: PowerPoint; presentation skills; constructivist didactics; interactive lectures; Bloom’s taxonomy.


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1 Introduction

More than a decade ago, the age of ‘Absolute PowerPoint’ (Parker, 2001) was diagnosed and it did not take long for it to be detected that ‘PowerPoint is evil’ (Tufte, 2003) and ‘Makes you dumb’ (Thompson, 2003). “PowerPoint shot by its own bullets” (Norvig, 2003) led to ‘Death by PowerPoint’ (Felder and Brent, 2005). The question “Does PowerPoint make you stupid?” (Simons, 2005) received contradictory answers and the conclusion was drawn that ‘Slides are not all evil’ (Doumont, 2005). Already in the early days there were an estimated 250 million licensed users of PowerPoint and it was
speculated that approximately 30 million PowerPoint presentations were held every day (Parker, 2001); a number which is estimated to have grown within a decade to 350 million presentations given each second around the globe (Parks, 2012). Today, more than 1.2 billion or one in seven people on the planet use the Microsoft Office package, which includes PowerPoint (Microsoft, 2016). The software enters people’s lives as soon as they start using computer devices. The early discussions have in part remained unresolved but PowerPoint, which in the late 1980s had been partially created “as a response to the new corporate world of interdepartmental communication” (Parker, 2001) has boldly become an omnipresent artefact deeply engrained in almost any corporation that is part of “the epistemic machinery which mediates activity within the culture of the respective institutions, where it gives materiality to ideas and knowledge in general” (Kaplan, 2011). At the same time, PowerPoint is a crossroads for politics within organisations when information as well as actors are in- or excluded (Kaplan, 2011).

Therefore, to become proficient business people, students of business administration and management will benefit from an education, which empowers them to develop into reflective PowerPoint users and consumers. In principle, the pervasive use of PowerPoint in business education offers a fertile soil for such a development.

However, it appears that in the daily practice of business education there is in this sense little conscious use of PowerPoint. Eyewitnesses from around the globe confirm that lectures and seminars all over the place are shot with their own PowerPoint bullets. A widespread user habituation to the particular presentations practices inherent in the software’s default slides and templates can be observed (Adams, 2006). On the basis of a review conducted at Karlshochschule International University, this paper provides some empirical support for the hypothesis that the software’s default templates dominate slides used in higher education. Lecturers have widely adopted the software but how they build slides and slide decks keeps Tufte’s early criticism alive and relevant (Tufte, 2003).

The discourse on PowerPoint and its related practices has brought to light a number of plausible and at least in part increasingly confirmed principles on both, the level of ‘how to do’ slides and ‘what to do with’ slides. Thus, from a methodological point of view the paper proceeds by assimilating and synthesising relevant principles from the corresponding literature. The principles are then used to go more in depth than previous contributions as far as the exploration and mapping of specific ideas is concerned. This is achieved by deducing inherently practical approaches to build and communicate with PowerPoint.

But education is about more than delivering great presentations. Writing against “The tyranny of PowerPoint”, Gabriel (2008) argued that “when used in a creative and non-routine way, PowerPoint can provide a learning and teaching experience in line with the visual sensitivities and skills of our times”. Yet, little explanation has followed from anyone as to how exactly this can be achieved in higher education. And very few lecturers seem to lead by example when it comes to going beyond the delivery of a lecture in form of a presentation, which in turn would create the synergy of acting as a role model to implicitly guide students to become reflective PowerPoint users and potentially great knowledge managers in later business life.¹

It is the main purpose of this paper to explore how one can get beyond the mere transfer conception of teaching with PowerPoint and instead work as a partner for students who use PowerPoint to mediate activities that shape students, let them travel into
new territory and enable them to grow (Craig and Amernic, 2006). It is assumed that such a constructivist approach to teaching with PowerPoint is bound to have a meta-level effect of enabling students to understand and access PowerPoint as part of the epistemic machinery they will use in their future jobs as knowledge workers. To get there, an explorative workshop involving 28 professors and lecturers from Karlshochschule International University was undertaken to identify how delivery, dialogue and other didactical approaches can be balanced when using PowerPoint in seminars and lectures. The results were structured following Bloom’s taxonomy (Bloom et al., 1956; Anderson et al., 1994).

2 The product, the process and their interdependency

Following a lack of differentiation inherent to early PowerPoint critiques, several authors including Doumont (2005) have emphasised the need to distinguish product (the slides) and process (the actual presentation session). Such a distinction can also have its drawbacks and just like any form of categorisation it can be artificial. However, for the purpose of the following analysis, the distinction will be instructive. On this basis it will also be possible to study the interactions between product and process. The product and the process may be congruent. In this case, the slides and the talk given are the same or in other words, the slides represent the central text (Knape, 2007). Such a programmatic use differs from an approach where PowerPoint provides only a so-called paratext (Genette, 2001), which complements the outspoken central text of the presenter Knape (2007) identifies the following types of Para-PowerPoints:

- slides which condense the central text
- slides which correlate with the central text
- slides which illustrate the central text, and maybe
- slides which contradict the central text (with irony, as a pun).

Para-PowerPoints of all four types can be useful in education. Many proposals, ideas and suggestions have been made by theory and practice to turn work with Para-PowerPoints into didactical achievements. These will now be reviewed systematically. But rather than providing another one-dimensional ‘how to use PowerPoint software in education’ document, the intention is one of mapping options which may be complemented and completed by the inclined teacher who seeks to use PowerPoint in a paragrammatic way as proposed by Gabriel (2008). According to Gabriel (2008), the paragrammatic user of PowerPoint is flexible rather than rigid and looks for ways to make the work with PowerPoint pliable and surprising.

2.1 The product

The tangible results produced by PowerPoint users regularly earn harsh and justified criticism. According to the literature, essential findings are that PowerPoint documents and individual slides
• contain either too much text to read or not enough text to understand (Doumont, 2005)
• come along with too much non-information, i.e., so called ‘noise’ (Doumont, 2005)
• heavily rely on default design patterns and here namely on the famously infamous bullet point list (Adams, 2006)
• implicitly confer a false authority on dubious knowledge (Gabriel, 2008, referring to Karreman and Strannegard, 2004)
• represent ‘chart junk’ (Tufte, 2003) if especially diagrams, graphs or images are misleading, conceal underlying assumptions, or oversimplify complex matters,
• force into linear thinking, even when this is inappropriate (Adams, 2006).

The question arises if this general criticism also applies to PowerPoint files produced for the purpose of higher education. To explore this question, a product review of PowerPoint documents prepared for bachelor students in management in the summer semester 2016 was carried out at Karlshochschule International University. In total, 7258 slides were screened (see Appendix 1 for details). The findings in part support the general criticism digested from the literature and stated above. A concern is the high number of bullet point slides which made up a third of all slides reviewed and which can have a tendency to force both lecturers and students into linear thinking. These are complemented by a high number of slides which use plain text only. While less than 20% of slides were overloaded (see Exhibit 1 for an example) with text, the problem does exist.

Exhibit 1  Example of a slide overloaded with text (see online version for colours)

Although not directly falling into the category of ‘chart junk’, an interesting finding was that identical pictures with an underlying symbolical or metaphorical message are used by different lecturers in very different contexts. Lecturers are often not aware
of this visual uniformity. The phenomenon can be amusing, boring but also irritating for students and will be further discussed below. A prominent example is the iceberg metaphor (see Exhibit 2).

Exhibit 2  Example for visual uniformity – same picture occurring in different contexts (see online version for colours)

As the product review undertaken at Karlshochschule International University came across excellent as well as highly problematic presentation documents, it is strikingly evident that criticism can be traced back to poor usage of PowerPoint technology rather than being an inevitable consequence of pinching a bit from the slideware honeypot. Therefore, it does not come as a surprise that numerous authors provide an affluence of advice on the topic. Some essential principles are so simple and plausible that prevailing widespread poor usage is hard to explain (Phillips, 2014). It is the poor usage in both academia and business, however, which calls for a summary and further discussion of such principles.

2.1.1  First principle: Acknowledge a ‘limited life of their own’

One of the original ideas when the technology was created was that it would allow “the content originator to control the presentation” (Parker, 2001). This unchanged tyranny of PowerPoint is to be further discussed below. What is crucial at this stage is that after most presentation events there is no more control: The slides are free and they follow the motto “I am a PowerPoint slide and therefore I am”. They are shared with others in electronic format and they travel. They travel to people who did not attend the actual presentation and they travel through time to receive an audience, which did not pay attention during the presentation in the anticipation that the slides would be made available afterwards. In essence, this leads to situations where readers (rather than listening readers) interpret and make sense of the slides. Doumont (2005) proposes a simple but effective principle when he states that slides should be able to stand on their own without telling all the details on their own.

The property which makes slides stand on their own had already been identified by management consultants before the PowerPoint age when slides were regularly produced with Corel-Draw: The regime traditionally requires not more than one message per slide, ideally in form of an action title, i.e., a short sentence including a verb. Doumont later reemphasised the importance of verb forms as “they help clarify what might otherwise be vague or cryptic” (Doumont, 2005). The second half of the principle, i.e., not telling all
the details, avoids the slide from becoming ‘the message’ and it thus ensures a paragrammatic rather than programmatic use of PowerPoint. But if further specified, it also serves human physical needs since Phillips (2014) demonstrates that the audience finds it difficult to take-in more than six objects on any one slide during a presentation. So in summary, with an action title and a content of in total no more than six objects, a slide can lead a limited life of its own.

2.1.2 Second principle: Break the visual uniformity

Mention the word PowerPoint and those who listen are likely to imagine a rectangle with a list of bullet points. It seems that over the years bullet point lists have been on the retreat but they still dominate the scene. Given the advantages of bullet points, there is little to be said against a slide deck well-tempered with lists. Nevertheless, especially in education it appears to be wise to resist the everlasting invitation by PowerPoint’s Microsoft to use bulleted text (Adams, 2006). The finding that emotionally stimulating materials trigger learning (Hove and Corcoran, 2008) suggests that visual uniformity needs to be broken more often. In this sense, Doumont (2005) recommends to be as visual as possible. As students like seeing pictures (Clark, 2008), it may be wise to accept the dominance of images (Gabriel, 2008). The visuality offered by images meets a didactical requirement given that “homogeneity is good for milk but not for ideas” (Norvig, 2003). On the other hand, Phillips (2014) recommends being cautious even with pictures. At times when a visual theme in form of a photograph on the internet is only a click away, certain pictures are downloaded into thousands if not millions of presentation documents. Such generic images of handshakes, thumbs up, the globe, people in front of a screen or even the iceberg shown in Exhibit 2 and the like can be seen to mark the post-bullet point generation of slide uniformity. This was confirmed by the product review referred to above where the majority of the photos and pictures found on 11% of the slides reviewed, were generic images. Instead, unique pictures and photographs are the ones which help telling stories, stimulate emotions and learning. Carefully selected, such images enhance meaning.

If pictures are used in conjunction with the first principle, a third principle suggested by Doumont (2005) and others no longer needs to be listed separately: avoid non-information or in another word visual ‘noise’. Fortunately a lot of the ‘noise’ from the early PowerPoint days like swirling objects, arrows which fly-in and other gadgets have over the years been thrown ashore by the tides of the PowerPoint Ocean and are no longer popular among users. Exhibit 3 shows an example for a slide where the principles discussed above were considered.

2.2 The process

Not only the resulting material but also how people perform with or sometimes also against their slides has attracted a good deal of criticism. Frequently, frictions are said to arise from dissonances between tale, i.e., the central text, and the slides (Adams, 2006) when the teacher is out of step with the material projected. An even more problematic situation arises when the presenter is completely squeezed out of the process (Parker, 2001). In this situation the attention of the audience is entirely focused on the slide deck, rather than on the presenter, let alone the content of the session (Kaplan, 2011). The focus of the students is on the screen and the teacher becomes a ‘stagehand’, a ‘disembodied
voice’ (Craig and Amernic, 2006). Strong ‘decks’ close down the debate rather than opening it up (Turkle, 2012, cited in Norvig, 2013). Clifford Nass further specified the issue when he described that while PowerPoint presentations lift the floor to allow some main points to come across, it also lowers the ceiling as it makes it harder to have an open exchange, where the lecturer as well as the students develop thoughts (cited in Parker, 2001). As such, it is not surprising that PowerPoint has largely extinguished note-taking. As a matter of consequence, whatever is not on the slide, will be ignored and forgotten (Adams, 2006). Meanwhile, everything that is on the slide must be important. But with largely homogeneous representation and the respective levelling of information provided, at the end of the session nothing remains to be important (Adams, 2006).

**Exhibit 3** Example of a slide that breaks visual uniformity and has a ‘limited life of its own’ (see online version for colours)

As Kaplan (2011) notes, PowerPoint offers materiality to strategic ideas as it enables people to display ideas that are not yet real (Stark and Paravel, 2008). This can be dangerous as it entails the potential to create an illusion of understanding and control (Bumiller, 2010). This can lead to wrong decisions, for example in business practice. But there are also illusions in education: James et al. (2006) found evidence that university lecturers end up having misperceptions about the utility of PowerPoint regarding its impact on learning. This is supported by Szabo, Hastings (cited in Craig and Amernic, 2006) who conclude that PowerPoint lectures mainly add to the entertainment rather than to the education of students. Knape (2007) bemoans a regrettable thinking in slogans. On such foundations, in the US military PowerPoint presentations have been reported to be performed in a ‘hypnotising chickens’ approach (Bumiller, 2010).

Whenever people get together for a PowerPoint session, a distinctive feature of the encounter is its one-way-ness (Adams, 2006) and persistent monologues. Students are put into a passive role. Empirical evidence suggests that on both sides, i.e., on the side of the students and that of lecturer there turns out to be a lack of spontaneity which translates into a lack of interaction (James et al., 2006). Instead of interaction the ‘delivery’ metaphor of learning dominates whenever PowerPoint presentations are on screen (Craig and Amernic, 2006; Adams, 2006).
The issues are severe. And they are deeply engrained in everyday practice in all sectors where PowerPoint is supposed to support the process. The education sector is anything but an exception. Two further principles can be introduced here to achieve a remedial effect.

2.2.1 Third principle: Always relate to the slide

It is evident and empirically confirmed that being out of sync with the projected slide is detrimental for both the teacher and the audience. Therefore a paragrammatic competence needs to be achieved. The B key can be a valuable parachute here as it displays a black blank slide when hit during full screen presentation mode. This can also help with the next principle.

2.2.2 Fourth principle: Remove the privileged status of the projection

The audience always follows PowerPoint’s invitation to watch the screen. The challenge for the presenter is to disintermediate the slidedeck, to evoke eye contact rather than screen contact and thus to remove the privileged status of the projection (Craig and Amernic, 2006). This can be achieved when the first principle stated above is adhered to and the slides do not tell all the details on their own. In this case, there remains an expectation opposite the presenter and teacher. While carefully balancing the risk of getting out of step with the projection and instead of dematerialising in the shadow of the screen, the teacher is likely to contribute to the learning experience by reintroducing spontaneity (Clark, 2008). An effective way to create a level playing field is by balancing delivery with dialogue. Craig and Amernic (2006) request more to student participation.

3 Ways to balance delivery and dialogue

When PowerPoint is in use, it is the delivery metaphor that regularly prevails (Adams, 2006). Seminar participants are ‘passively engaged’ rather than ‘actively engaged’ (Jones, 2003). As vividly illustrated by Bumiller (2010), the one-way street of presentation ‘delivery’ remains one of the most fundamental points of criticism. The flood of presentations in conjunction with its non-interactive delivery has led some companies to explicit non-PowerPoint policies (Neill, 2012). However, given 1.2 billion accessible copies worldwide, in business and in teaching many people are likely to continue working with the software (Microsoft, 2016). Therefore, it is appropriate to ask what can be done if and where going from one extreme to the other is not a realistic option.

Following the product review referred to above, at Karlshochschule International University an explorative workshop involving 28 professors and lecturers was undertaken to identify how delivery, dialogue and other didactical approaches can be balanced when using PowerPoint in seminars and lectures (see Appendix 2 for a description of the workshop). The findings, which are particularly useful for education but can also be beneficial in a business or other organisational contexts, will be summarised in this chapter.
A model commonly used in education is Bloom’s taxonomy (Bloom et al., 1956; Anderson et al., 1994). The taxonomy classifies learning objectives and differentiates the cognitive, the affective and the sensory domain. According to the revised edition of Bloom’s taxonomy (Anderson and Krathwohl, 2001), the cognitive domain differentiates between remembering, understanding, applying, analysing, evaluating and creating. Many universities use the taxonomy’s differentiations in this domain to describe the learning objectives and derive the content of degree programs, modules and teaching units. Being concerned with a future-oriented didactical approach involving PowerPoint, following the taxonomy can be a useful guiding principle, which is compatible with the ways in which many educators act in preparation of their tuition. Consequently, the proposals gathered during the workshop were classified according to Bloom’s taxonomy and an excerpt is summarised in Exhibit 4.

Exhibit 4  Ways to balance delivery and dialogue when using PowerPoint (see online version for colours)

<table>
<thead>
<tr>
<th>Remember</th>
<th>Understand</th>
<th>Apply</th>
<th>Analyse</th>
<th>Evaluate</th>
<th>Create</th>
</tr>
</thead>
<tbody>
<tr>
<td>Remember competition</td>
<td>Students revise my (bullet-point) slide</td>
<td>Role-Play</td>
<td>Students discuss short news article</td>
<td>Students discuss a quotation or video sequence</td>
<td>Students use word cloud to create a case</td>
</tr>
<tr>
<td>Quiz / Photo Quiz</td>
<td>Students explain a cartoon</td>
<td>Students interpret meaningful pictures</td>
<td>Students discuss a visualised change of context</td>
<td>Students discuss ‘competing’ slides</td>
<td>Students to proceed with a commenced negotiation</td>
</tr>
<tr>
<td>Define notions before definitions are shown</td>
<td>Students project learning goals</td>
<td>Students use company logos for application of theory</td>
<td>Students complete 2x2 matrix</td>
<td>Students do a ‘pre-mortem’</td>
<td>Students aim for best graphical visualisation of theory</td>
</tr>
</tbody>
</table>

The table is not meant to be exhaustive. Rather it serves as a source of inspiration for educators and in this sense items may be superseded over time and further lines may be added below. Also, the position of an item is not necessarily fixed to one of the columns. So for example, a brief role-play can be used to apply knowledge but also to create new knowledge. A selection of examples from the exhibit can serve to illustrate the overall approach: Following Craig and Amernic (2006), the underlying spirit is to (re-)ignite “student-generated orality” and to disrupt the “unidirectional nature of the discourse which accompanies PowerPoint presentations”. In this sense, the approaches trigger interaction in the classroom. This can take the simple form of a (photo-) based quiz, which interrupts a presentation to internalise specific knowledge or terminology (see Exhibit 5 for an example). The idea is already widespread and easily implemented by the help of the various add-ins to the software, which are available to buy and download. The ‘remember competition’ can be a variation of the same theme with the difference that the students themselves generate the quiz questions from one lecture to the next in order to find a winning team by the end of the term.

An effective way to enhance and check student understanding is to ask for a creative revision and alternative representation of a slide with standard bullet-point content. Proposals can be made digitally or on flipcharts or Metaplan boards. Apart from activating course participants in small groups, the oral presentation of the new ‘slides’ requires students to form full sentences of what may only have been key-words on the original slide. The competence to translate and articulate required here appears to be
more important than ever in a world where people are increasingly ‘alone together’ (Turkle, 2012) confronted with abbreviations, incomplete texts and lack of grammar. It is at this stage that precision, coherence and sensemaking is required. This can save students from ‘lists gone amuck’ (Shwom and Keller, 2003).

Exhibit 5 Example for a photo-quiz (see online version for colours)

Delivery by an instructor or teacher usually stops, when students move into the role of applying newly acquired knowledge. This has traditionally been a non-PowerPoint domain, and there are good reasons to maintain this. Yet, requested to apply their knowledge, students today are regularly asked to put together a presentation themselves. If even today “there is no better way to learn than to teach” (Whitchcote and Salter, 1753/2010), then this wisdom applies here in a special sense as everything laid out in the previous sections of this paper would apply to student presentations as well as to any other presentation.

The column ‘Apply’ in Exhibit 4 aims to capture a further potential in that it describes options to weave short intervals of knowledge application into a PowerPoint session. A simple method to apply newly acquired theoretical knowledge with the help of visuals on slides can be to confront learners with familiar pictures or symbols like company logos and to ask for the application of a theory or analytical tool (e.g., screening the logo of a fashion label to trigger a discussion on the company’s marketing mix).

When it comes to analysis, the screen can be used in manifold ways to display objects and matters for analysis. Here, again the stage can be set for meaningful pictures as described in the section on breaking visual uniformity above (e.g., an advertisement for a soft drink at the Times Square vs. in the desert). Students can be involved in teacher-centric dialogue as well as in decentralised individual or group work. But not only pictures or texts can be purposefully deployed to nurture analytical skills. Graphs and conceptual diagrams, which are often rushed through in standard presentations, can serve to draw connections between ideas, get students to organise their knowledge and to examine problems. One illustrative example are $2 \times 2$ matrices which, especially in management studies but even more so in management consulting, are popular frameworks (e.g., the BCG Portfolio Matrix by Henderson (1970), the integration/Responsiveness-Framework by Bartlett and Ghoshal (2002) or the role typology by Gupta and Govindarajan (1991)). Rather than consuming ready-made matrices, students’ analytical skills can be challenged when they are in the need to derive the axes and categories of a matrix on their own. This will also help them to evaluate the constraints and benefits of such complexity reducing tools. Again, only a slight
variation in the deployment of slides can make a fundamental difference in the learning experience.

Evaluation requires argument, critique, appraisal, selection, judgement and decision. Many of the approaches already described can form part of a PowerPoint session to work on these skills in general and in a specialised field. The screen can be used to trigger multi-perspectivity and discourse, for example by showing slides with contradicting or competing content. While the limitations of a two-dimensional medium remain, the ambiguity of the real world can be brought into the seminar room through this window on the wall. A further opportunity to enhance evaluation skills arises by making offers for processes and heuristics to go through. An example would be to offer an alternative way to conclude whether a certain project should be pursued or not: students can be requested to conduct a so called pre-mortem where they assume that a not yet started project failed in the future and try to determine the reasons why (Klein, 2013).

What remains to be achieved from a didactical point of view is creation. To produce new and original work out of a slideware session is a particular challenge. Again, other settings would lend themselves much more to reach such an objective. However, it appears to be possible to turn the delivery metaphor upside down and let the participants of a seminar create something meaningful from ingredients provided via the screen. This can be simple instructions for a role play, or the context for and the beginning of a negotiation which is to be continued. Somewhat different is the approach to make use of a popular contemporary phenomenon with potential in teaching and learning: word clouds (Miley and Read, 2012). With PowerPoint as visual aid, word clouds can form a basis for students to create cases or content relating to the learning objectives of the class.

4 Conclusion

Since Parker (2001) and Tufte (2003) initiated the discourse, a vivid discussion of the merits and perils of PowerPoint has been ongoing in both business and education. It is likely, that a large percentage of the hundreds of million presentations given each day suffers from poor usage of the software guided by default slides and templates.

On the basis of the critical reviews provided through the literature, four principles of ‘how to do’ slides and ‘what to do with’ slides were derived. Two of them relate to the product itself: to allow for the slides to have ‘a limited life of their own’ and second, to break the visual uniformity. The other two principles build on the first ones and refer to the actual process of giving a presentation, asking the presenter to always relate to the projection and to remove the privileged status of the projection. The four principles can support the delivery but especially in education, the delivery itself is a problem as the audience remains in passive engagement. Again, this is not a problem of the software itself but of how it is deployed. Results from an explorative workshop with university lecturers confirm Gabriel’s (2008) study who asserted that “when used in a creative and non-routine way, PowerPoint can provide a learning and teaching experience in line with the visual sensitivities and skills of our times”. This appears to be of high relevance as today’s students are the professionals, managers and leaders of the future and they are likely to adopt not only what they learned in but also about PowerPoint sessions at university. The results and didactical recommendations illustrate specifically what can be achieved. The categorisation according to Bloom’s taxonomy allows for future extension.
and analysis. Taking this as a starting point, lecturers can lead by example and act as a role model to implicitly guide students to become reflective PowerPoint users and potentially effective knowledge workers in later business life. Future research which discovers, structures and reviews further methodological approaches to balance delivery and dialogue can help further in resolving the widely discussed dilemmas that appear when PowerPoint is used.

References


Note

1This has been tracked down to PowerPoint’s invitation to be used in a bullet point form, mechanical and linear thinking way (Adams, 2006).

Websites


Appendix 1: Product review of PowerPoint files in higher education – The case of Karlshochschule International University

From the relevant literature on PowerPoint in particular and slideware in general, the following key criticisms regarding the product produced by PowerPoint authors can be distilled: PowerPoint documents and individual slides

- contain either too much text to read or not enough text to understand (Doumont, 2005)
- come along with too much non-information, i.e., so called ‘noise’ (Doumont, 2005)
- heavily rely on default design patterns and here namely on the famously infamous bullet point list (Adams, 2006)
- implicitly confer a false authority on dubious knowledge (Gabriel, 2008, referring to Karreman and Strannegard, 2004)
- represent ‘chart junk’ (Tufte, 2003) if especially diagrams, graphs or images are misleading, conceal underlying assumptions, or oversimplify complex matters
- force into linear thinking, even when this is inappropriate (Adams, 2006).

To investigate if this general criticism also applies to PowerPoint files produced for the purpose of higher education, a product review was carried out at Karlshochschule International University. The university uses an online system to make teaching material electronically available to the students. For the review, all modules of the bachelor programs for which PowerPoint teaching material was made available during the summer semester 2016 were selected. The PowerPoint files (or PowerPoint files converted into pdf-format) were downloaded and analysed using descriptive statistics based on the following criteria:

- number of documents per module
- total number of slides per module
- number of slides by category, differentiating between bullet point slides, photo slides, video slides, concept-diagram slides, slides with graphs or tables, exercise slides or other slides
- check of availability of content page, learning objectives page and sources/references
check, if slides contain too much text (i.e., more than seven bullet points with more than seven words each or equivalent)

further issues observed.

As PowerPoint is not used in all modules, PowerPoint teaching material for 20 out of 37 modules in management was reviewed. Across the 20 modules analysed, the lecturers offered between 20 and 100 slides per session. In total, 7258 slides were reviewed. The analysis brought to light that more than 2300 bullet-point slides were found in the sample (representing a share of 32% of all slides), followed by concept diagram- and photo-slides (each 11%), graphs and tables (8%) and exercises (6%). The remaining third of slides did not fall into major categories but regularly featured other default design patterns implicitly proposed by the software, most notably the plain text slide (see Exhibit 6).

Exhibit 6  Type of slide, in %

The university is dedicated to a constructivist didactical approach which and limits class sizes to a maximum of 30 students and regularly includes a wide range of interactive elements in class. Nevertheless, the findings at least in part support the general criticism digested from the literature stated above. A third of the slides come along as bullet point lists. In addition, many of the slides which did not fall into the categories stated above were pure text slides and showed characteristics very similar to bullet point slides. Bullet point lists can be interpreted as elements that force both lecturers and students into linear thinking. 17% of all slides appeared to be overloaded with a high number of items and too much text as for example shown in Exhibit 1.

No valid results could be established whether slides contained too little information to be understood. And due to resource constraints, no detailed data could be gathered regarding ‘noise’ and ‘chart junk’ but the both problems were only in a few exceptional cases addressed as issues. A feature of visual uniformity, however, was that certain motives repeatedly occurred in different contexts, especially when authors tried to use generic symbols or metaphors to convey ideas and concepts. A striking example was is the iceberg metaphor which appeared in a number of slide decks but in each case was used to explain a different matter (see Exhibit 2 for an example). Other generic images that appeared again and again were handshakes, thumbs up, the globe, people in meetings, people in front of a screen, or puzzle pieces.
As maybe expected, the problem of dubious knowledge or false authority is limited scope in academia. Thus, 68% of the content slides reviewed made reference to sources. The majority of the 32% of slides without references were made available by external lecturers and business practitioners, a finding which supports the general criticism against the spread of dubious knowledge [in business] made in the literature.

It is not unlikely that at universities where traditional lecture formats are more widely adopted, problems with the PowerPoint product will be more prevalent. As traditional lectures usually do not contain interactive elements, the number of exercise slides for example would typically much lower than the 435 out of 7258 slides (6%) identified here.

Appendix 2: Explorative workshop to identify ways to balance delivery and dialogue

Following the product review referred to above, at Karlshochschule International University an explorative workshop involving 28 professors and lecturers was undertaken to identify how delivery, dialogue and other didactical approaches can be balanced when using PowerPoint in seminars and lectures. The group of participants was diverse with respect to age (25–57 years), sex, cultural, educational and professional background (see Exhibit 7).

With the help of a PowerPoint presentation summarising the challenges also stated in the initial paragraphs of this paper, the workshop participants were introduced to the topic. Furthermore, the participants were confronted with the empirical results of the product review (see Appendix 1). The group was then split into teams of five to six participants. The teams were tasked to share their experiences and to brainstorm approaches that can be used in class to balance delivery and dialogue when PowerPoint is in principle in use. The teams were asked to structure their findings according to Bloom’s taxonomy (Bloom et al., 1956; Anderson et al., 1994) which based on previous didactical trainings is known to all professors and lecturers at the university. Following the explorative team sessions, each team presented their proposals to all participants and the ideas were critically discussed. The concepts which were considered to be suitable for use in class are summarised in Exhibit 4 and described in the main body of this paper.

Exhibit 7  Professional background of the workshop participants