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## Poster – A Form of Communication for Doctoral Students

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### Abstract

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For many doctoral students, the initial contacts with the community are international conferences. Since the communication language at most conferences is English, it is also an opportunity to demonstrate the student's skills in this language. The first genre that PhD students use to present their research results is often the poster. It has its limitations, but also advantages. An advantage is that, unlike an oral lecture, which is intended for an "average listener", the poster can offer diverse explanations and can provoke feedback (often in the form of constructive criticism) that can stimulate new ideas for the poster creator. In any case, the poster is a genre with specific features, requiring skills that a future scientist should acquire. This paper and accompanying virtual presentation provide the principles of the poster in terms of both its content and form, as well as presentation, and they also deal with the experiences of the author in teaching this genre to doctoral students. The paper also compares the poster with other ways of presenting research results - with research papers and oral presentations. Attention is also paid to the technical details that allow doctoral students to avoid unpleasant surprises while printing and transporting posters. Finally, it identifies new trends in the preparation of and general approach to posters, which should assist doctoral students in knowledge dissemination.

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**Keywords:** PhD student; communication in English; poster; graphics; poster session.



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## **1. Introduction**

Doctoral students are people whose task is to learn how to survive and hopefully also thrive in the domain of science. To do so, they must be able not only to carry out research but also to present its results. The ways of presentation can differ – from research papers, through oral presentations to posters. The last one is considered to be the easiest, and that is why it is a suitable form for beginning scientists. Conventions of poster presentations are social practices that should be included in academic training.

Posters are not as much discussed as other research presentation forms. They used to have a second-class status, compared to other more familiar genres. Swales & Feak (2000) referred to the academic poster as the “poor country cousin”. Lately, however, the popularity of posters has been on the increase. While in 2011, a Google™ search on “research poster” yielded about 20,000 hits, and the more specific phrase, “poster presentation of research” produced 300 hits (McIntosh-Murray, 2007), in the present search (20 July, 2016) the corresponding numbers were 314,000 hits for “research poster” and 67,300 for “poster presentation of research”. As can be seen, the popularity of posters as a means of academic communication has been rapidly increasing.

This is because conference presentations have become very popular, which is probably the result of the increasing pressure on academics to present their research outputs. Thus it is not possible to satisfy all academics’ needs to make oral presentations, causing increasing numbers of them to turn to the poster genre. Therefore, posters are playing an increasingly important role in scientific conferences, and they constitute a valid and interesting alternative to paper presentations. Swales (2004) sees “the emergence of the new genre of the conference poster out of elements of the research paper and conference visuals or handouts”.

An important aspect of poster sessions is that they enable face-to-face communication between the members of the community. An informal discussion between the presenter and audience members gives an invaluable opportunity for networking. At the stage of doctoral studies, at the beginning of one’s career, the person could feel outside the community. Becoming its member is an important aspect of academic life.

Posters are used in almost every discipline, but their status might be discipline- or even conference-specific. Yet, even here some development can be seen. In 2011, Masterin stated that in the hard sciences, posters are mostly used and valued, while in the humanities this genre is very seldom used. This is no longer true. On 27 July 2016, searching “research poster” and “humanities” in Google resulted in 20,400 hits. A number that is worth considering even in this area.

The increasing importance and widespread role of posters in the academic environment explains why this issue is dealt with in a number of guides, papers, webpages, etc. Communicating one’s research requires learning/teaching how to do so. This is much more demanding than just formatting the poster (e.g. font of the text, its size and colour, graphs, figures, blank space). Knowing all aspects and attaining the skills for poster presentation should be part of the academic apprenticeship.

A number of considerations are connected with the poster, and not all of them have been sufficiently described in the literature. The primary purpose definitely is to spread knowledge obtained through research. However, the scope of the research must be quite narrow, as the space is limited. Naturally,

language plays an important role here, but in poster preparation, its role is rather specific, and that is why language means must be carefully chosen. Another issue is the presentation in the poster session, which is also highly specific. These aspects will be discussed in the following sections.

## **2. Conference poster as a genre**

First, it is necessary to clarify the meaning of genre. It has been defined in various ways (Swales, 1998). Taboada (2004), for instance, states that “genre is primarily a structurally-determining characteristic of texts” and adds “there must be established consensus”. She also claims that in the use of genre, the situation is important. Swales (1990) argues similarly that “a genre is ‘a class of communicative events’ sharing some set of communicative purposes, and similarities in structure, style, content, and audience”. Martin, on the other hand, defines genre as a “reflection of the goal oriented aspect of the text” (1994). This reflection of “goal oriented aspect” is important because it involves the communicative purposes of the poster, which are multiple - not only to present research results, but also to interact with community members, in accordance with Swales, who highlights the concept of ‘community’ (2004). An academic poster can thus be defined as a multimodal communicative genre, with text, graphics, colour, speech and even gesture, all of which combined to convey meaning (Kress & van Leeuwen, 2001).

As with all genres, also this one has typical features, such as the content, design, organization, style and expected audience. Basically, notes Carter (2013), a “poster is a visual aid that should attract members of the audience and further support spoken communication between the author and the audience”. The academic poster has evolved from more traditional genres of scientific communication, such as articles, conference visuals and handouts (Swales, 2004) into a unique species with specific features.

The basic consideration when talking about posters is the limited space, which effects also other aspects. The size is determined by the conference organizers and usually is not more than about 120 x 90 cm. Second, the poster is a single visual unit, which means that the audience should be able to perceive it as a whole. Further, the poster is expected to stand alone and speak for itself, which is a demanding task in the view of the limited space. So the ideas must be expressed not only in words but mostly in graphics. The visuals enhance the research and enable quick and easy understanding, which facilitates and stimulates discussion during the poster session. All types of visuals are suitable: numerical (statistics and formulae), scriptural (text), graphical (graphs, diagrams, maps), and figurative (photos, images) (Rowley-Jolivet, 2002).

The text presented on the poster then must be concise. As Stoss (2003) puts it, “The poster is NOT the pasting of a scholarly article on poster board or foam-core and standing by to defend results reproduced in miniature on the ‘poster’ ”. In fact, it may be closer to “an illustrated abstract” (Hess & Liegel, 2000). This definition reflects our perception of the poster – it is a graphical presentation. Wittich and Schuller (1973) support the graphical nature of the poster when they describe it as “a visual combination of bold design, colour, and message intended to catch and hold the attention of the passer-by long enough to implant a significant idea in the mind”.

The text on the poster should only give basic information, via compressed language (bullet points and telegraphed wording), as recommended by Swales and Feak (2000). Since one of the poster's tasks is to attract attention, it must be aesthetically pleasing, i.e., it must not be overloaded with text and graphics. The general rule is that the ratio between text : graphics : blank space should be 20 : 40 : 40.

As the audience members "read" the poster from a distance of one or even two meters, both the font and the graphical elements must be of adequate size, which is again in contradiction with the small area available. These requirements, albeit restrictions, provide space for creativity and individuality; this stems from the fact that the goal of the poster is not only to inform, but also to persuade to stop and learn more. Thus the poster must first attract the audience's attention and draw it away from the competition. It is like a shop window, the purpose of which is to entice passers-by to enter. This approach will be further described in the part of New trends in posters, in this paper.

McIntosh-Murray (2007) assigns the poster genre three basic aspects: forms - characteristics and organizing structures; norms - standards (written and unwritten) and customary behaviour associated with poster presentations; and values - poster session presentations, what is considered to be valuable or important.

One of the features of the poster genre is one-on-one interaction with the audience. It distinguishes the poster presentation from the oral conference presentation, where the audience is the same from the beginning until the end, and the presenter controls what is happening.

As indicated, the poster genre is a hybrid form, including the poster itself and also its presentation. Although poster presentations might differ among disciplines, they follow similar conventions, based on best-practice advice (D'Angelo, 2011). They are comprised of three elements: scientific information attractively displayed on a single board (graphical presentation of research results); a presenter (author); and viewers (audience members). So the impact of a poster depends on how the human and material elements work together in context (McIntosh-Murray, 2007).

### **3. Process of poster creation**

For the structure of posters, Nicol and Pexman (2003) suggest the standard research model of Introduction, Methods, Results, and Conclusions, which is the expected structure that the poster genre shares with the research paper or abstract. However, this readily recognizable flow of ideas can compete with attractiveness, in other words, with the author's ability to be creative. To be attractive, a poster cannot be generic, it cannot repeat the style of many other posters. This is in contradiction with some conferences, where poster creators are required to use a prescribed template. This might kill the best efforts to disseminate knowledge, which is the primary task of poster presentation. The authors are robbed of the possibility of attracting attention.

Logically, a one-page entity presenting a limited scope of research is not expected to have an abstract; actually, the poster itself is an abstract (Hess & Liegel, 2000). It is a question if it should contain an Introduction. This definitely depends on the type of conference. If its topic is narrow enough, all participants are expected to be experts in the area, so the poster does not need a general introduction and can "jump" immediately into the problem. Then it is better to give the Motivation/Purpose of the research – a statement or question opening the issue, which is then dealt

with in the Conclusion. At the beginning the question is asked, at the end it is answered - the cycle is closed.

Creating a poster actually starts before its physical preparation. The author should take several steps (Lengalova, 2006):

- Considering poster sessions in general
- Analysing the audience
- Thinking of the novelty of the topic or findings
- Visualizing the message in the design space
- Creating coherence
- Using a template
- Applying the poster style to the text
- Finalizing the poster

From the very beginning the poster creator must keep in mind the aspects of the genre. Basically – the poster should give the thesis (i.e. basic idea) when it stands alone and should motivate the conference participants to initiate a discussion with the presenter during the poster session. As Russell *et al* (1996) put it, “A poster should speak for itself, without any additional explanation by the presenter”. However, the modern trend is to suppress the “alone-standing” aspect of posters.

It is important to know the background of the audience – this decides the “deepness” of knowledge the poster creator can present. If the conference is monothematic, both the poster itself and further oral mini-presentations will avoid an introduction of the topic and go immediately to the core of the research. If, on the other hand, the participants are not homogenous, the activities around the poster must adapt to the situation. An issue that must be considered is also that the audience is moving and spends only several seconds, or a couple of minutes at best, on one poster. So, the content must be quickly absorbable.

Then the author needs to think of the novelty of his/her research, i.e., he/she must justify the research. There is no point in repeating what has already been done. In this regard, the creator might ask the following: Is the main point of the research a new method? Was a standard method applied on a new material? Are the results in contradiction with previous studies? What is the practical/potential use of the results? How is the approach to the topic new and unique? These and other questions are to be answered in formulating the thesis of the study.

The author must also consider the stage that the research has reached. If the study has only brought some preliminary (a limited amount of) results, it is easier to process them to the form of a poster. On the other hand, if a complex study has been carried out, then McIntosh-Murray (2007) advises “narrowing things down”. A “distillation process” is applied, limiting the content so that it is manageable in the space given. This might be difficult. Many researchers, and PhD students even more, want to show how much they have accomplished. Then there is a danger that the poster will be overloaded with information and will be more confusing than explanatory.

When the scope of the research is properly limited, the material must be collected and the message adapted to the space given. A number of techniques can help. First is determining the importance of ideas, then the organization of the ideas into sections. If the poster deals with a problem and its

solution, the division into sections is quite simple (description of the situation – identification of the problem – suggestion of the solution – evaluation of the solution). When, on the other hand, the properties of two (or more) materials are to be compared, then expressing contrasts between the elements is suitable.

As the next step, cohesion should be created, which enables the audience to follow the flow of ideas, to go from one subtopic to another and distinguish the importance of ideas. Font size helps here (the larger = the more important), as do graphic hierarchies, visuals, colours, indenting of lines and the arrangement of blank space. Margins around a figure or text create a frame which highlights the content. The proportion of 40% of blank space should also be kept to make the poster attractive and pleasant to look at.<sup>1</sup>

When the content is decided, the poster creator can concentrate on the form. A simple way is to use a template, which can be easily found (paid or free of charge, different sizes) on the Internet. Templates master the technical side, but still leave enough space for creativity. Some poster authors, however, prefer to create their own layout, mostly in PowerPoint.

The limited space of the poster lends itself to a design based on graphical presentation, but some text is also required. Full sentences are hardly ever used as they contribute to a text-dense appearance, an off-putting element. Instead, concise language is applied – getting the message across in as few words as possible. Formal (bullets) and language (nominalization, participles) means are used. When the language has been adapted, the poster should be checked for consistency, grammar and spelling, and also the overall look is assessed. Sometimes the proportions between text–graphics–blank space are correct, but often the text and visuals become concentrated in some places, creating large empty areas; this should be avoided. An example from our course is shown in Fig. 1.

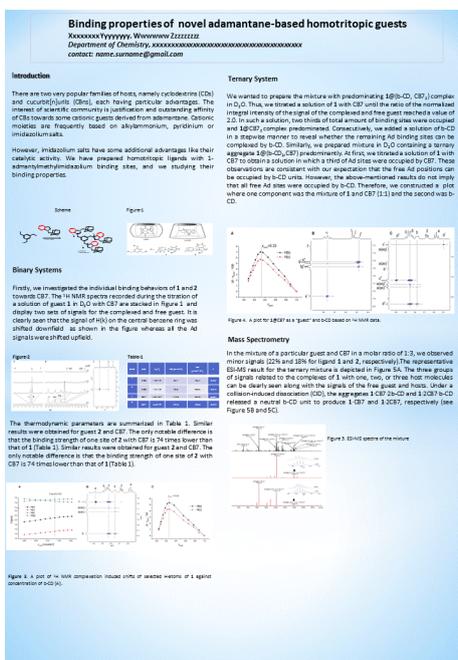


Fig. 1. Example of poor poster layout

<sup>1</sup> Recommendations for letter size and colour meanings can easily be found on the Internet.

When the poster is perfect on the computer screen, it can be printed, preferably by a professional company that can also laminate it, so the result is a large glossy panel. This finish makes the poster not only attractive, but also durable and easier to handle.

Concluding in accordance with Briscoe (1996), the poster requires balanced text, visuals and blank space, all with the idea of a moving audience that reads from a certain distance. It should also join the academic look with attractiveness and creativity.

The final note on poster preparation is the ethics connected with them. Can a poster, once prepared, be reused? While for conferences the answer is clear “No!”, using it repeatedly for different purposes is desirable. The poster can be displayed permanently in halls or corridors at the department/university. Doing so not only demonstrates results of research but also motivates students to produce their own posters.

#### **4. Poster session**

Preparing the poster is just part of the process, another being its presentation during the poster session. Now it is time for the poster creator to demonstrate independent thinking, readiness, comprehension of the topic, as well as language competency. To do so, the creator/presenter must attract the attention of a mobile audience. This is the moment when creative poster preparation becomes important. If the poster fails to distinguish itself from the others, it will fail to attract attention, minimizing its academic potential.

Once the attention of a passer-by has been obtained, it is vital to keep it, which means mastering one-on-one interaction sufficiently well to deliver the message of the poster. The presenter must be ready for the various backgrounds of the audience. It is recommended to prepare presentations of different lengths and to start with the most important findings that may be of universal interest. Only when the person shows some passion for the topic can discussion continue in more detail. This is how a poster presentation differs from an oral one. At a poster session, the audience member controls the entry point into the conversation about the research (Martin, 1994), while in an oral presentation the leading role is on the presenter’s side. While an oral presentation is given in the standard structure of a research paper, so the speaker and applies a “linear approach”, a poster presentation is delivered in several portions: the essential idea, followed by an extension of the whole, or, based on the viewer’s interest, individual aspects.

The poster session is a chance for in-depth discussion, which is mutually beneficial for the audience and the presenter; the latter can receive important feedback. Considering the expertise of conference participants, the presenter (in case of PhD students, a beginning scholar) has a chance to put forth his/her ideas to experienced members of the community and receive their invaluable advice and ideas, which can influence further research on the topic. Such intensive discussion (Gosling, 1999) can modify, or even change the researcher’s approach.

As said before, besides the informative side, poster sessions play a crucial social role. The often-repeated advantage of poster presentations is the opportunities for networking (Martin, 1994), an important aspect in the globalized academic world and considering the stress of grant agencies on the

international character of research. A poster session is an ideal chance for close personal interactions, which cannot be replaced by electronic or telephone communication.

From this point of view, the behaviour of the poster presenter is important. Actually, beside the attractiveness of the poster itself, this is the second factor influencing how many audience members will approach. Visual openness and readiness are definitely pluses of the presenter, as is the ability to solve various situations during the discussion.

Thus poster sessions bring both expectations and tensions. Expectations of getting new impulses, and tensions resulting from unknown, unpredictable questions, all the more so if the presenter is not overly social. However, a doctoral student should know also this aspect of professional life and be ready for it.

As demonstrated, in spite of some limitations, poster sessions have some advantages compared to oral presentations:

- There is more opportunity for discussion with the audience (the time is not as limited as in oral presentations).
- An oral presentation can only be delivered once; a poster can be discussed several times with many participants during the session, thus improving the overall feedback.
- A poster session is an informal opportunity to meet people and have one-on-one discussions, which is an important step in the doctoral student's efforts to become a member of the community.
- For many, the one-on-one presentation is much less stressful than presenting in front of a full room.

## 5. Teaching experience

Learning the principles and rules of posters is only one component of the Communication in English course that is taught at Tomas Bata University in Zlin, Czech Republic. The other, no less important for students, is gaining the skills. "Learning by doing" is the motto of the course.

Some of the graduate students in the course already have some conference experience and have seen some positives and negatives related to posters in their disciplines. So they can now compare their observations to the way poster presentations are portrayed in the literature (McIntosh-Murray, 2007). Sharing ideas is a good starting point in dealing with posters.

When students have been given the background knowledge, they should apply it in a simulated poster session. They are asked to find a conference where they could potentially present their poster and to follow the conference guidelines. They also discuss the draft of the poster from the content viewpoint with their supervisor and, being non-native speakers of English, from the style viewpoint with the teacher in the course. Then a poster session is organized. As it would be quite expensive to have the posters printed, they are only projected on a screen. The author gives a short (1 – 2 min) presentation, which should motivate the audience to start discussion. The audience is always asked to have some questions, even if not very suitable, so that the presenter can show his/her reactions. This

training gives the students a feeling of a real poster session and prepares them for unpleasant situations.<sup>2</sup>

After the 'question period' simulation, the student is given complex feedback on the poster session: content, style, presentation, discussion not only from the teacher but also from peers. In an ideal case, the student presents a real poster for a real conference, and the feedback gives them a chance to improve it before printing.

## **6. New trends in posters**

As the importance of posters and their scope increases, and in response to new situations, there have been some developments and new trends in the genre, which have aimed at eliminating the disadvantages of posters, thereby making them more attractive to a broader range of academics. Since poster sessions are largely competitive events, those who are not very assertive can feel discriminated. So the first trend is giving a chance to everybody. Some conferences organize a common event: with the poster projected in the meeting hall, each author must deliver a 2-minute platform presentation, so that all participants learn what the research is about, and then the presenter is ready to answer individual questions later on in front of the actual poster (IFAC, 2003). Thus each member of the audience can discuss the poster and the information it contains in detail with its creator.

Other improvements can be seen in the poster itself. It is quite common that the poster has more authors but only one presenter. Since the hall at a poster session is usually crowded, for the audience it is difficult to recognize whom to contact when they are interested in a particular poster among all the other posters and people around. A good practice now is to place a small photo of the presenter in front of the name given on the poster. Then everybody knows who is responsible for each poster.

As stated, the time when the presenter is by the poster is limited, so audience members cannot ask about details of the study outside the poster session. To further enable discussion, some authors place their business cards by the poster so that everybody can take one and contact the creator later. The same reasoning is behind the idea to pin an envelope with small copies of the poster (A4 handouts) to the display. At any time the participants can take one with them (and probably also contact the author later).

One interesting improvement has lately been seen at poster presentations dealing with the preparation or modification of materials. By the poster, the creators place transparent plastic bags containing samples of the prepared materials, which are really self-explanatory. These are efficient means of communication both during poster sessions and outside of them.

In my opinion, the most attractive poster presentation was that one that broke the basic rule saying that the poster must be a stand-alone entity. The printed poster was very simple, with a minimum amount of information, definitely not self-explanatory, more an invitation to the presentation. The topic was the simulation of a process, where the result is its animation. The presenter of the poster had a laptop and if a passer-by was interested, the presenter showed and explained the animation. Not surprisingly, this was the most successful and effective poster presentation of the conference. This also

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<sup>2</sup> Understandably, not all aspects of poster presentations are included in the course, like reading the audience, competing with the other posters, but this is just the first step. Later, the doctoral students have a chance to produce a real poster presentation at student conferences at the university. This is however, beyond the scope of the course and this paper.

persuaded me of the importance of creativity. The fact that the genre of posters is still developing proves that it is alive and has a future.

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